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# NOTES ON THE ORNITHOLOGY OF TROPICAL EAST AFRICA

By Herbert Friedmann
and
Arthur Loveridge

CAMBRIDGE, MASS., U. S. A.
PRINTED FOR THE MUSEUM
April, 1937

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No. 1.— *Notes on the Ornithology of Tropical East Africa*

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## INTRODUCTION

The collection of birds reported on in this paper was made by A. Loveridge when residing in East Africa from October, 1915, until May, 1923. About 4,000 skins of some 800 species and subspecies were preserved. The preponderating majority of these specimens came from the northern half of Tanganyika Territory, but two natives, especially trained for the purpose, made collections in Bukoba, British Ruanda, Uganda and Kenya Colony, while further material was obtained during the closing stages of the East African Campaign in the vicinity of Lumbo, Mozambique. As many of the localities are scarcely known outside the countries in which they occur, a geographical list of them is attached for the convenience of investigators using this paper.

Four years after Arthur Loveridge joined the staff of the Museum of Comparative Zoology, the bulk of the collection, comprising at least a pair of each form (where more than one specimen had been obtained) was acquired for the Museum of Comparative Zoölogy through the generosity of Dr. Thomas Barbour. Several hundred duplicate specimens were purchased by the East Africa and Uganda Natural History Society, the American Museum of Natural History and the Academy of Natural Sciences of Philadelphia; those from the latter institutions have been available when needed in the present study. However, only the specimens in the "main" collection in the Museum of Comparative Zoölogy have been listed under each species, the others being referred to only by localities. Unfortunately the locality records of some of the earlier duplicates were not retained before the skins were dispersed by donations to various museums in England and East Africa, but the data for some of the birds now in the Coryndon Memorial Museum in Nairobi are here included.

In addition, a few birds collected by Loveridge while with the Smithsonian-Chrysler Expedition in 1926, and now in the U. S. National Museum, have been included in this report because they came from localities visited during the work involved in amassing the main collection.

The identifications of some of the birds were made years ago at Tring by the late Dr. Ernst Hartert and Mr. Arthur Goodson, but all have been gone over and checked by the principal author (H. Friedmann), who is alone responsible for the systematic part of this report. In 1923 the collector (A. Loveridge) compiled a systematic list of the

collection with brief notes, the latter chiefly regarding birds which were subsequently disposed of and which, therefore, were not available to the principal author in his study of the material. This list was freely consulted in writing this report.

The principal author began to study this unusually fine and complete collection in 1928 at the Museum of Comparative Zoölogy, and continued to do so there until he left for the United States National Museum in September, 1929, where the work has been brought to a conclusion. He has written the entire body of the paper; the junior author is responsible for the descriptive list of the collecting localities, as well as for the short notes given under each species in quotations followed by his initials. His share in the paper is really more extensive than this would indicate, as he has given freely of his extensive knowledge of the country and has helped the senior author in understanding many otherwise puzzling distributional facts.

The following museums have loaned material for use in the present study—The Academy of Natural Sciences of Philadelphia, the American Museum of Natural History, the Carnegie Museum, the Cleveland Museum of Natural History, the Field Museum, the Museum of Comparative Zoölogy, and the United States National Museum. Information concerning certain specimens under their care has been kindly supplied by Dr. Erwin Stresemann, Berlin; M. Jacques Berlioz, Paris; and Dr. V. G. L. van Someren, Nairobi.

This report is precisely what its title implies—an attempt to put in usable form and to place on record a great many facts, observations, reflections, and opinions about a large number of kinds of birds found in tropical East Africa. It is not a faunal study—the series of specimens were usually too small to allow for that, but it is hoped that the facts herein recorded may be useful as a partial basis for such a study at some future time. In some respects this paper may be looked upon as a supplement to the work van Someren has done in Kenya Colony and Uganda. His main paper, published at Tring in Novitates Zoologicae, **29**, 1922, pp. 1–246, is a mine of information about the distribution of teeming bird life of the countries it deals with. The present collection, probably the finest one ever gathered together in the northern half of Tanganyika Territory, extends the limits far to the south of van Someren's localities. The birds collected in Ruanda and Mozambique are relatively few and of decidedly minor importance in this connection.

When one considers the amount of collecting that has been done in tropical East Africa the results revealed by the present study are

really surprising. Thus, out of some 800 forms of birds involved, we are able to extend appreciably the previously known ranges of not less than 104 species and subspecies. Ten forms new to science have been found amongst them and have been described elsewhere; thirty-one birds are new to the avifauna of Tanganyika Territory, one of them, *Muscicapa striata tyrrhenica*, being recorded for the first time from the Ethiopian region. By "new to Tanganyika Territory" or "extension of range" we mean new with reference to published records. There may be other Tanganyikan specimens in other museums, but unless they have been recorded in print, we have no way of knowing about them.

The classification followed for the arrangement of orders and families is that formed by Wetmore (Proc. U. S. Nat. Museum, **76**, 1930, pp. 1–8). Within the families the sequence of genera, species, and subspecies is patterned after the arrangement in Sclater's "Systema Avium Aethiopicarum." All measurements are in millimeters.

### *Brief Summary of Results*

For the convenience of students interested in the distribution of East African birds the following brief summary may prove a useful guide to the contents of this paper.

1. New Forms described by the principal author from the Present Collection.

*Sarothrura e[illegible] inguens*
*Rhinoptilus africanus illustris*
*Eremialector decoratus loveridgei*
*Streptopelia capicola anceps*
*Rhinopomastus minor extimus*
*Pogoniulus bilineatus conciliator*
*Neocichla gutturalis angustus*
*Cossypha heuglini euronota*
*Sheppardia cyornithopsis bangsi*
*Anthreptes orientalis barbouri*

Of these, one, *Cossypha heuglini euronota*, is from Mozambique; the rest are from Tanganyika Territory.

The following Tanganyikan bird was described from another collection in connection with the present report:

*Bycanistes cristatus brevis*

Birds New to Tanganyika Territory.

*Ardeola idae*
*Spatula clypeata*
*Melierax metabates metabates*
*Falco ardosiaceus*
*Falco dickinsoni*
*Sarothrura elegans languens*
*Rhinoptilus africanus illustris*
*Eremialector decoratus loveridgei*
*Streptopelia capicola anceps*
*Caprimulgus europaeus unwini*
*Rhinopomastus minor extimus*
*Bycanistes cristatus brevis*
*Tricholaema diadematum diadematum*
*Pogoniulus bilineatus conciliator*
*Mesopicos goertae centralis*
*Mirafra africana dohertyi*
*Anthoscopus roccatii taruensis*
*Neocichla gutturalis angustus*
*Pycnonotus tricolor minor*
*Pycnonotus layardi fayi*
*Sheppardia cyornithopsis bangsi*
*Oenanthe oenanthe rostrata*
*Irania gutturalis*
*Hippolais icterina*
*Muscicapa striata tyrrhenica*
*Bradornis microrhynchus taruensis*
*Anthus nicholsoni neumannianus*
*Anthreptes orientalis barbouri*
*Euplectes taha intercedens*
*Estrilda charmosyna kiwanukae*
*Uraeginthus bengalus brunneigularis*

Extensions of Range other than those already Accounted for as New to Tanganyika Territory.

*Butastur rufipennis*
*Falco tinnunculus tinnunculus*

*Falco tinnunculus carlo*
*Francolinus coqui hubbardi*
*Francolinus shelleyi trothae*
*Francolinus squamatus zappeyi*
*Lissotis hartlaubii*
*Hoplopterus armatus*
*Numenius arquata lineatus*
*Rhinoptilus cinctus emini*
*Turturocna delegorguei sharpei*
*Ruwenzorornis johnstoni kivuensis*
*Corythaeola cristata yalensis*
*Crinifer zonurus*
*Centropus senegalensis fasciipygialis*
*Centropus burchellii*
*Agapornis pullaria ugandae*
*Glaucidium capense scheffleri*
*Caprimulgus europaeus meridionalis*
*Colius indicus pallidus*
*Colius macrourus pulcher*
*Halcyon chelicuti zinjense*
*Aerops bochmi*
*Melittophagus lafresnayii oreobates*
*Melittophagus variegatus loringi*
*Coracias weigalli*
*Bycanistes subcylindricus*
*Lybius zombae albigularis*
*Tricholaema melanocephalum stigmatothorax*
*Tricholaema lacrymosum ruahae*
*Indicator variegatus variegatus*
*Prodotiscus insignis reichenowi*
*Campethera nubica pallida*
*Dendropicos lafresnayi hartlaubii*
*Mesopicos griseocephalus kilimensis*
*Mirafra africanoides intercedens*
*Hirundo angolensis arctincta*
*Campephaga quiscalina münzneri*
*Oriolus chlorocephalus*

*Corvus rhipidurus*
*Parus rufiventris pallidiventris*
*Parus fringillinus*
*Argya rubiginosa emini*
*Andropadus insularis insularis*
*Cossypha heuglini euronota*
*Neocossyphus rufus rufus*
*Oenanthe isabellina*
*Acrocephalus baeticatus suahelicus*
*Camaroptera brachyura littoralis*
*Alseonax adustus fülleborni*
*Anthus lineiventris*
*Laniarius funebris degener*
*Laniarius fülleborni*
*Laniarius lühderi lühderi*
*Dryoscopus gambensis erwini*
*Pomatorhynchus australis littoralis*
*Sigmodus retzii tricolor*
*Eurocephalus rüppelii böhmi*
*Onychognathus tenuirostris*
*Nectarinia melanogastra melanogastra*
*Pseudonigrita arnaudi emini*
*Sorella eminibey*
*Ploceus aurcoflavus*
*Ploceus bojeri*
*Euplectes hordeacea sylvatica*
*Euplectes hordeacea changamwensis*
*Euodice cantans meridionalis*
*Pytilia melba grotei*
*Pytilia melba belli*
*Lagonosticta rubricata haematocephala*
*Lagonosticta senegala kikuyuensis*
*Lagonosticta senegala somaliensis*
*Uraeginthus cyanocephalus*
*Poliospiza atrogularis reichenowi*
*Linurgus kilimensis kilimensis*

This report was completed and left the senior author's hands in the spring of 1932. In the summer of 1936 he revised it as best he could without actual access to the specimens, and in this way attempted to bring it up to date as a number of important papers dealing in whole or in part with the same region had appeared in the interval. The most important of these are:

Bangs, O. and Loveridge, A.
1933. Bull. Mus. Comp. Zoöl., **75**; pp. 143–221.

Chapin, J. P.
1932. Bull. Amer. Mus. Nat. Hist., **65**.

Cheesman, R. E. and Sclater, W. L.
1935–36. Ibis (several parts).

Delacour, J. and Edmond-Blanc, F.
1933–34. L'Oiseaux, **3** and **4**.

Granvik, H.
1934. Rev. Zool. Bot. Afr., **25**, pp. 1–190.

Lynes, H.
1934. Journ. f. Ornith., **82**, Sonderheft, pp. 1–147.

Moreau, R. E., and Sclater, W. L.
1936. Proc. Zool. Soc. Lond., 1935, pp. 843–891.

Peters, J. L. and Loveridge, A.
1936. Bull. Mus. Comp. Zoöl., **79**, pp. 129–205.

Sclater, W. L. and Moreau, R. E.
1932–33. Ibis (several parts).

van Someren, V. G. L.
1932. Nov. Zool., **37**, pp. 252–380.

Vincent, J.
1933–36. Ibis (several parts).

In addition to these longer papers, a number of important notes by Grant and Mackworth-Praed appeared in the *Ibis* and the *Bulletin of the British Ornithologists' Club*; by Grote and Meise in *Ornithologisches Monatsberichte*, etc.

Inasmuch as the specimens were not available during this revision of the manuscript, changes have been reduced to a minimum; it is possible that more would have been effected under other circumstances, but it is felt that no major ones have been left out in this way.

*Alphabetical List of Collecting Localities*

ANKOLE. A district of the Western Province of Uganda. It lies northwest of Bukoba and west of Lake Victoria. Chiefly a grass country, it has an altitude of about 5,000 feet. Collections were made here in 1919 by Kamau wa Kiragu.

BAGILO. Altitude 5,000 feet. A native village on the northern slopes of the Uluguru Mountains, Tanganyika Territory. It is situated on former forest land and is still adjacent to extensive rain forest. Very different ecological conditions are to be found in the rain forest in contrast to the grass-grown valleys with their swift-flowing streams. For further details see Mem. Mus. Comp. Zoöl., 1929, **50**, p. 96.

BAHI. Altitude 2,731 feet. A station on the Central Railway of Tanganyika Territory west of Dodoma. A rather arid, acacia-thorn country during the dry season, but many acres are completely flooded during the rains at which time waterfowl assemble in great numbers.

BOGOTI. See Wami River.

BUCHOSA. Stated by Salimu bin Asmani to be near the Kagera River and a good day's march north of Bukoba on the west shore of Lake Victoria.

BUDDU (BUDU). Now a saza, or chieftainship, in the Masaka district of the Buganda Province of Uganda. It lies due west of the Sesse Islands in Lake Victoria. Both forests and swamps are well represented in the district. Kamau wa Kiragu collected here in 1919 while on his way to Ruanda.

BUNGU. Mr. R. E. Moreau writes me that, "Bungu is the name of a jumbeate half as big as the entire East Usambara Mountains and running from the Korogwe-Makuyuni railway line to near Bumbuli," Tanganyika Territory. It therefore comprises altitudes of from 2,000 to 4,000 feet, this explains the strange admixture of savanna and rain-forest forms from this locality. Maps show two villages bearing the name of Bungu, situated near each other and about ten miles north of Korogwe Station on the Tanga Railway. Collections were made at Bungu by Kamau wa Kiragu in 1921.

CHANTWARA. Stated by Salimu bin Asmani to be six hour's march (i. e. about eighteen miles) north of Bukoba on the west shore of Lake Victoria.

CHANZURU. Altitude circa 1,500 feet. A village ten miles northeast of Kilosa station on the Central Railway of Tanganyika Territory. Ecological conditions essentially those of Kilosa.

DAR ES SALAAM. Altitude 42 feet. Capital and chief port of Tanganyika Territory on the east coast. Collecting was carried out along the shore and on the flats (semi-swamped during the rains) which lie due west of the town. Some shooting was done among the baobabs and coconut palms north of the town. Most collecting was accomplished in June, 1918 and on other occasions while awaiting the arrival of transports.

DODOMA. Altitude 3,706 feet. Chief town of Ugogo, situated on the Central Railway of Tanganyika Territory 260 miles west of Dar es Salaam. For a detailed description see: Loveridge, 1928, Proc. U. S. Nat. Mus., **73**, Art. 17, pp. 3–4.

EKAGANGO (KAGANGO). Not located on maps. In the Ankole district of the Western Province of Uganda.

ELDORET. Altitude 6,875 feet. Chief town of the Uasin Gishu Plateau, Kenya Colony, and a station on the main line of the Kenya-Uganda Railway. I carried out a little collecting in the open grass lands and along a stream a few miles south of the township.

FRERE TOWN. Altitude 50 feet. A settlement for freed slaves on the mainland opposite Mombasa Island, Kenya Colony. Typical coastal vegetation with mangroves abundant along the shore, mangoes and coconut palms among the scattered huts. Most of my collecting was done in close proximity to the Church Missionary Society's station.

GULWE (IGULWE). Altitude 2,512 feet. A station, east of Dodoma, on the Central Railway of Tanganyika Territory. An inhospitable desertlike spot with dense patches of thorny scrub varied by more open sandy areas with scattered baobabs and rocky kopjes.

GWAO'S VILLAGE. Altitude circa 4,145 feet. Situated thirty miles south of Singida on the Singida-Udatu road, Tanganyika

Territory. In dry upland country with dense patches of windblown scrub and thorn bush; scattered kopjes and worn boulders of large size are quite a feature of the landscape. Roads are lined with manyara hedges to serve as windbrakes.

IKIKUYU (Not KIKUKU in the same province). Altitude circa 2,500 feet. Three days march south of Gulwe Station on the Central Railway of Tanganyika Territory. Scattered *tembes* (kraals) and unstumped clearings for growing *mtama* (millet) occur at intervals in the 'bush' which consists of an almost impenetrable thorny thicket. Kopjes are not uncommon.

ILONGA. A village near Kilosa in Central Tanganyika Territory. For conditions see under Kilosa.

ISOONA. See Suna.

ISUNA. See Suna.

ISIKISIA (IZIKISIA). Altitude 3,900 feet. A village of Tabora district a few hour's march north of Tabora on the Tabora-Mwanza road, Tanganyika Territory. At the time of my visit a region of rather dry miombo bush and orchard forest.

KABALE. In Rukiga saza, which see. Presumably many of the birds labeled Kabale, were shot in the vicinity rather than in the township, Tanganyika Territory.

KABARE, BUKOBA. Stated by Salimu bin Asmani to be a two and a half hours' march (about seven miles) north of Bukoba on the west shore of Lake Victoria.

KABURA. A village in Mawokota saza in Entebbe district, due west of Entebbe, Uganda. One of the halts made by Kamau wa Kiragu where he collected in 1919 when on his way to Ruanda.

KAKINDU. (Not KAKINDU in Buso Province.) Stated by Salimu bin Asmani to be five hours' march north of the Kagera River and therefore near the southern border of Uganda.

KARUMIYA (KARUM). Stated by Salimu bin Asmani to be nine hours' by boat west of Mwanza on the southern shore of Lake Victoria.

KATABASUNGU. A village in Budu saza, Masaka district, Buganda Province, Uganda where Kamau wa Kiragu collected a few birds in 1919 when on his way to Ruanda.

KAYANDA. Presumably a village lying between Maziba and Kabura, Mawokota saza, Entebbe district, Buganda Province, Uganda.

KEDONG VALLEY. This well-known valley lies south of Escarpment Station on the Kenya-Uganda Railway. Upland acacia-thorn country with rocky escarpments and towering cliffs in the gorge near Lake Naivasha. All specimens from this region are in the Coryndon Memorial Museum, Nairobi.

KIBOSI. Apparently a village near Rutaka, in Kigezi district, southwestern Uganda. One of the localities in which Kamau collected in 1919.

KIDETE STATION. Altitude 2,175 feet. On the Central Railway of Tanganyika Territory between Kilosa and Gulwe stations. Dry-bush country—baobab, thorn, miombo—, ecological conditions not unlike those of Kilosa.

KIDIDIMO. Altitude circa 3,000 feet. One or other of two villages of this name within five miles of each other and about fifteen miles southwest of Dodoma, Tanganyika Territory.

KILIMATINDE. Altitude 3,591 feet. In Manyoni district ten miles south of Saranda Station, Central Railway, Tanganyika Territory. Dry scrub, open dry forest, scattered baobab trees, manyara hedges, kopjes. In the flats below a few swamps form during the rains.

KILOSA. Altitude 1,640 feet but most of my collecting was accomplished in the hills behind the Otto (now Kilosa) Plantation, circa. 1,800 feet. Kilosa station is now considered to be 175 miles by rail west of Dar es Salaam. Dry miombo bush covers the hills and parts of the flats. Native gardens of maize and cotton extend over a great area radiating from the station. Uncultivated land gives rise to dense growth of grass and sword grass. Waterbirds were collected along the river and in some stretches of country flooded by the heavy rains. One might characterize the Kilosa district as typically weaver bird country for birds representing many genera of this family are dominant and their nesting activities subsequent to the rains could not escape the notice of the least observant of travellers.

KIMAMBA. Altitude 1,502 feet. A station nineteen miles east of Kilosa on the Central Railway of Tanganyika Territory. It is

one of the principal cotton producing centres of the territory. In general its topographical features are similar to those of Kilosa though extensive open forest occurs in close proximity to the cotton plantations and most of my collecting was done along the edge of this forest.

KIMBWABWA'S VILLAGE. See Mkata Plains.

KINYAMBWA (NYAMBWA). A village about thirty miles southwest of Dodoma and twenty miles east of Mahaka. Physical features similar to those of Dodoma.

KIPERA. Altitude circa 1,600 feet. A village on the Kilosa-Iringa road about nine miles south of Kilosa, Tanganyika Territory, with essentially similar vegetation but differing physiographically by the absence of hills. A few species occur here which were not found at Kilosa.

KISANGA. Altitude 2,500 feet. A village on the Kilosa-Iringa road at the foot of Elton's Pass fifty-one miles by road south of Kilosa, Tanganyika Territory. Conditions similar to those obtaining at Kilosa.

KITORTU. In the Budu saza, Masaka district, Buganda Province, Uganda.

KOME ISLAND. Altitude 889 feet. An island at the south end of Lake Victoria about twenty-five miles west of Mwanza. It was visited by Salimu bin Asmani who collected there in 1922.

KONGWA. Altitude circa 3,000 feet. About twenty miles almost due north of Gulwe Station on the Central Railway of Tanganyika Territory. Kongwa is best known by the Church Missionary Society's training college which was my headquarters during the week that I spent there. Open mimosa forest and acacia bush with scattered baobab trees form the principal vegetative features of the landscape; it is a dry country except during the rainy seasons.

KONSIGWE (KONZIGWE) is near Kinyambwa, which see.

KYADONDO. A saza, or chieftainship, of Mengo district, Buganda Province, Uganda where collecting was done by Kamau wa Kiragu in 1919.

LALAGO. Altitude circa 4,500 feet. A large village with Arab and Indian shops in the Maswa district of Mwanza, Tanganyika Territory. It lies four days march on a footpath from Mkalama to Mwanza. The country-side for miles about the village is very much under cultivation and grazing—rolling downs sparsely covered with thorn bush. At the time of my visit (October 17, 1922) the midday heat and glare were trying though the nights were cold. Crows were especially abundant. Crested Cranes, Sacred Ibis and Secretary Birds were seen in the vicinity.

LASICALET. (LESICARET.) A village in Budu saza, Masaka district, Buganda Province, Uganda.

LONGIDO. Altitude 4,200 feet. A little collecting was done (February, 1916) in the vicinity of the British Camp at the foot of the western slope of Mt. Longido, fifty-three miles from Arusha, on the Arusha-Nairobi road. Open mimosa thorn bush with rocky hills dominates the scene; streams descend from the mountain which is totally different in its vegetation from the surrounding steppe.

LUKAYA see RUKAYA.

LUMBO. Altitude 50 feet. On the mainland opposite Mozambique Island, Mozambique. Typical East Coast vegetation—coconut palms flourished in the sandy soil but it supported only a scrubby vegetation and comparatively few trees, of these the baobab was dominant. Mangroves throve in the muddy sheltered inlets and waterfowl were collected here in the vicinity of the British Camp from June to November, 1918.

MADAZINI. Altitude 2,500 feet. A few huts on the Kilosa-Iringa road between Kipera and Kisanga, two days march south of Kilosa, Tanganyika Territory. Camp was pitched in the middle of the road in a patch of primary forest bordering a stream. This forest supported a fauna related to that of the rain forests of the Uluguru Mountains. At the same time I saw and captured the rare tsetse—*Glossina austeni*—the only example of this species which I ever encountered.

MAHAKA. Altitude circa 3,000 feet. A village on a scarp twenty-five miles southeast of Kilimatinde, Manyoni district, Tanganyika Territory. Salimu collected here in 1922.

MASAKA. Altitude 4,200 feet. A township twenty-four miles west of Bukakata port (northwest shore of Lake Victoria) in the Masaka district, Buganda Province of Uganda. A coffee and cotton growing region with an average rainfull of thirty-seven inches. Kamau wa Kiragu collected at Masaka in 1919.

MASOMUNTU MUKUBWA. Not located, according to the label it is in British Ruanda, i. e. the Kigezi district, Western Province, Uganda.

MAZIBA. A village in Mawokota saza, due west of Entebbe, Uganda. Another of Kamau's collecting localities in 1919.

MBALA. A village near Kisanga in the southern part of Kilosa district, Tanganyika Territory. A stream flows by the village. At the time of my visit (February 26–28, 1923) bare-throated francolins were common, two species of guineafowl were present in very small numbers.

MBETA. A village in the Ulugurn Mountains, which see.

MBONOA. Altitude circa 4,300 feet. A few scattered huts in Singida districts, seven miles north of Itigi Station on the Central Railway of Tanganyika Territory. Around the huts were clearings made by the natives, beyond was open thorn bush and dense scrub; surface water was scarce.

MBUGWE. In the Budu saza, Masaka district, Buganda Province, Uganda.

MBULU'S VILLAGE (Not Mbulu township, Mbulu district, northern Province). Altitude circa 4,500 feet. Situated two days' march south of Singida on, or near, the Itigi-Singida road, Tanganyika Territory. Plenty of open acacia-thorn *mbugwe* as well as dense thickets such as occur in the vicinity of Gwao's village which is only about six miles distant.

MDJENGO'S VILLAGE (MADJENGO). Altitude circa 5,000 feet. A village fifteen miles north of Singida on the Singida-Mkalama road, Tanganyika Territory. Dry scrub, both open and in dense thickets, clothes the hillsides; rocky kopjes are a feature of this country which is only moderately well watered in the dry season.

MHALALA see Muhalala.

MIKANDO. Presumably in the Kigezi district, Western Province, Uganda.

MKALAMA. Altitude 3,953 feet. Due north of Singida, Tanganyika Territory, of which it was formerly a district headquarters. There are several rivers in the vicinity, but the few birds collected were shot in dry, open bush a few miles outside the town.

MKATA PLAINS, RIVER and STATION. Altitude 1,314 feet. Mkata Station is two hundred and forty kilometres west of Dar es Salaam, Tanganyika Territory, and in close proximity to the river from which it takes its name. Such collecting as was done was carried out north of the station where the extensive plains are open, or sprinkled with scattered acacia bushes, mimosa and other thorn trees. Thickets occur quite frequently while along the banks of the big river grow huge trees usually associated with primary forest. Kimbwabwa's village was at the northern end of the plain.

MKINDO RIVER (MKINDU). Altitude circa 1,400 feet. A small tributary of the Wami River with which it unites almost exactly forty miles due north of Morogoro, Tanganyika Territory. At the time of my visit, rank growth of sedge and grass made it difficult to get about. From the luxuriant riot of vegetation arose mimosa trees and in some places they were so numerous as to amount to a forest. The river rises in the neighboring mountain Kirui which was climbed for 2,000 feet; near its summit is a vegetation totally different from that growing at its base.

MLEWA'S. A village in the Singida district of Tanganyika Territory.

MOROGORO. Altitude 1,628 feet. Situated on the railway a hundred and twenty-six miles west of Dar es Salaam, Tanganyika Territory. It is the capital town of the Morogoro district. Most of my collecting was done in the vicinity of Government House a mile and a half south of the town and situated much higher than the town on the lower slopes of the Uluguru Mountains. In the dry valleys and ravines which scar the mountain side many birds were found which usually occurred only at higher levels. Most of the accipitrines were shot in the orchard forest of the extensive flats which stretch away to the north of the town. Waterfowl were procured on the lower reaches of the river which flows through the town.

MPINGA. Altitude circa 3,000 feet. A village in Dodoma district, twenty-five miles due west of Dodoma Station and about fifteen miles southeast of Bahi Station on the Central Railway of Tanganyika Territory.

MSIMBA. Altitude circa 1,600 feet. A small village near Ilonga and about ten miles northeast of Kilosa, whose ecological conditions it shares. Tanganyika Territory.

MTALI'S. The village of Chief Mtali. Situated about twenty miles south of Mkalama, on the Mkalama-Singida road. Since the closing of Mkalama station it comes under Singida district, Tanganyika Territory.

MUHALALA (MHALALA). Altitude circa 2,500 feet. Low-lying country in the Manyoni district between Saranda Station and Kilimatinde, Tanganyika Territory. Salimu stayed for a night on his way through to Mahaka.

MUKANDO. See Mikando.

MWADIRA. Altitude circa 4,500 feet. A few scattered huts in Mwanza province, Tanganyika Territory, between the Semo and Simiyu Rivers, a hard march northwest of Lalago. The region is devoted to cattle grazing and maize cultivation. In the adjacent *mbugwe*, bull's horn acacia is abundant: on these extensive plains, inundated during the rains, such birds as sandgrouse, bustard and ostrich were found.

MWANZA. Altitude 3,760 feet. The well-known township on the south or southeastern shore of Lake Victoria between Smith Sound and Speke Gulf. Mwanza is rich in bird life; this is particularly noticeable along the swampy marshes of the lake shore where cormorants, ibis, geese and kingfishers are much in evidence.

MYOMBO (MEYOMBO). Altitude 1,600 feet. A village on the Kilosa-Iringa road where it crosses the Myombo River about nine miles south of Kilosa, Tanganyika Territory. The vegetation is similar to that of Kilosa but open miombo forest containing many large trees covers an extensive area.

NAIROBI. Altitude 5,490 feet. The capital city of Kenya Colony three hundred and thirty miles inland from Mombasa. It provides suitable environment for many types of bird life. Forest-

loving species find sanctuary in the Karura and Ngong Forests as well as in the Parklands Reserve. Without the town the almost limitless plains stretch away towards the horizon; swamp-haunting species occur among the marshes and, during the dry season, along the course of the then stagnant Nairobi River. Other kinds may be found in the extensive banana plantations which fill the valleys while many kinds of weavers frequent the native gardens as well as the plains and forest-edge.

NDALA. Altitude circa 4,000 feet. A mission station and village forty miles northwest of Tabora just east of the Tabora-Shinyanga road, Tanganyika Territory. Faunistically similar to Tabora.

NDTEZA. In the Ankole district, Western Province, Uganda.

NDUGUYU RIVER. A river about twenty-five miles northwest of Mkalama, Singida district, Central Province, Tanganyika Territory. The river was dry when we arrived (October 14, 1922) and we had to dig for water after a trying march in withering heat over sunbaked and cracked thorn-bush steppe.

NGARI MTONI. Altitude circa 4,600 feet. Site of a British camp by the ford across the river at the foot of Mount Meru on the Arusha-Nairobi road, Tanganyika Territory. Conditions much like those at Nairobi: very little collecting was done.

NYAMBITA. Altitude circa 4,400 feet. A village about six miles northwest of Sagayo on the Sagayo-Mwanza road and about eighty miles from Mwanza, Tanganyika Territory. The country consisted of rolling grassland with scattered trees; manyara hedges had been planted as windbrakes near many villages in this region. At the time of my visit (November 1922) the flats were inundated with water by the frequent and heavy rainstorms.

PARKLANDS. Altitude circa 6,000 feet. A suburb of Nairobi in which occurs the extensive Forest Reserve; the few birds from this locality were collected on the outskirts of the forest.

POOMA. Altitude circa 4,500 feet. Fifteen miles southwest of Singida on the Singida-Udatu road, Tanganyika Territory. For a description of this region see Gwao's Village.

RUANDA. British Ruanda in the Kigezi district, southwestern Uganda.

RUKAYA (LUKAYA). A village in Mawokota saza, due west of Entebbe, Uganda. Kamau wa Kiragu collected at Rukaya on his way to or from Ruanda.

RUKIGA (LUKIGA). A saza, or chieftainship, near Kabale, capital town of the Kigezi district, Western Province, Uganda. The altitude is about 6,000 feet. The region is also known as British Ruanda.

RUTAKA. In western Uganda, but not located.

SAGAYO. Altitude 4,429 feet. An important village on the Simiyu River about sixty miles in a straight line southwest of Mwanza; it is in the Maswa district of Mwanza Province, Tanganyika Territory. In the immediate vicinity of the village the reddish soil was very dusty (October, 1922), beyond was the open common land with stunted and more or less widely scattered thorn bush. This land furnished the grazing for large flocks of goats and herds of cattle. Nearby were *mbugwe*, the black soil much fissured, in some cases covered with knee-deep dry grass, in others the grass had been burnt off and fresh green blades were springing up through the charred stubble. In some areas there was fairly open thorn bush with a few widely scattered larger trees, chiefly acacias, growing on the black cotton soil. Rocky granite kopjes with evergreen shrubs growing in the interstices of their rocks occurred here and there. Along the banks of the dry bed of the Simiyu River were great trees with dense thickets at their base, in places these thickets were often as much as thirty yards broad and extended for some distance. At the time of our visit the Simiyu consisted of a few scattered pools interrupted by sand banks and stretches of pebbles.

SAMUMBA. Altitude circa 4,145 feet. A village in the south of Singida district, close to Gwao's Village (which see for a description of the ecological conditions, Tanganyika Territory). Salimu bin Asmani collected here in 1922 when turned back by an outbreak of plague at Singida.

SANGA. A village in the uplands of Ankole, Uganda.

SANGA (MSANGA). Altitude between 4,000 and 5,000 feet. A river just northeast and east of the Semu (Semo) River to the northwest of Mkalama but in the Maswa district of Mwanza Province, Tanganyika Territory. A day's march from Lalago.

SARANDA. Altitude 3,511 feet. A station on the Central Railway of Tanganyika Territory between Dodoma and Tabora. It is in the Manyoni district of Singida Province. Open flats, which are more or less flooded during the rains, are baked, cracked and dusty at other times. To the north they give place to bull's horn acacia and open mimosa forest. To the south dense thorn scrub. To the west miombo bush along the rift valley escarpment.

SHANWA (SHANDWA). Altitude between 4,000 and 5,000 feet. In Maswa district of Mwanza Province, Tanganyika Territory, 33° 40° W. 3° 17′ S. An important village in which there are several Arab stores. It is situated at the foot of an extensive rocky hill which rises sharply from a vast plain. Waders and marsh birds come winging their way from distant swamps to roost in the stunted trees which grow from the precipitous scarps of this hill.

SIMBA (SIMBO). Altitude 4,400 feet. Thirty miles northwest of Tabora near the western edge of the Wembere Flats and near the border of the Tabora-Nzega districts of Tabora Province, Tanganyika Territory.

SIMBITI RIVER. A river about thirty miles northwest of Mkalama, Singida district, Central Province, Tanganyika Territory. It flows into Lake Eyasi. The plains crossed on the way from Mkalama were very hot (October, 1922) and a terrific east wind was blowing. I have rarely seen such a great variety of game birds as were to be found in the vicinity of this river at this time. Guinea-fowl were present in great numbers, two or three species of francolin, two species of sandgrouse, two species of bustard, and doves innumerable, the Cape long-tailed species vying with the Senegal in numerical strength.

SINGIDA. This well-known government station lies sixty miles due north of Manyoni on the Central Railway, *i.e.* midway between Mkalama and Kilimatinde. It is headquarters of the Singida district, Central Province, Tanganyika Territory.

SINGO. A saza, or chieftainship, of Mubende district, Buganda Province, Uganda.

SUNA (ISOONA, ISUNA). Altitude circa 4,500 feet. A village thirty-three miles north of Itigi on the Central Railway of Tanganyika Territory. The region was very arid at the time of my first visit (October, 1921) and only one waterhole occurred

in the whole trek from Itigi to Suna, the route being through dense thorn bush. In the vicinity of Suna the country is more open and subject to cattle grazing. A few baobabs and bussu palms are almost the only trees but manyara hedges, planted as windbrakes, are a conspicuous feature of the vegetation and give a touch of vivid green when everything else is burnt to shades of brown. Rocky watercourses occur in the lower ground between the rolling hills and water is retained in scattered pools.

SUNGWIRI. A very small village near Kilosa (which see), Tanganyika Territory.

TABORA. Altitude 4,000 feet. A station on the Central Railway of Tanganyika Territory. Capital town of the Tabora district, Tabora Province. This well-known and long-established town has an annual average rainfall of thirty-three inches. At various times I collected here for brief periods, sometimes among the kopjes to the west, the more open country, or in proximity to the bush which crowns the hills to the south of the town.

TINDIGA. Altitude circa 1,500 feet. A village a few miles outside Kilosa, Tanganyika Territory, in a large cultivated area. There are, however, many acres of sword grass which provide a retreat for lions and elephant. During the rainy season miles of country become inundated and so attract many species of waterfowl which are rarely seen at other times.

TUMUTUMU. Altitude circa 5,000 feet. A village between Fort Hall and Nyeri, Kenya Colony. Typical Kikuyu country with quantities of bananas growing in the well-watered small valleys; remnants of virgin forest allowed to remain on the steeper slopes; numerous patches of cultivation interspersed with old gardens lying fallow and overgrown with thickets. Being the home village of one of my collectors, Kamau wa Kiragu, on one or two occasions he did a little collecting there when home on furlough.

ULUGU. Altitude circa 4,500 feet. A village on the Ushora River, Singida district, Central Province, Tanganyika Territory. See Ushora.

ULUGURU MOUNTAINS. Altitude where collecting was done 5,000–6,000 feet. Specimens bearing this name as the only locality were collected in 1922 by Salimu bin Asmani when on a visit to

his home village of Bagilo (which see). A great variety of topographical conditions occur in close proximity to the village.

USHORA (USSHORA, USCHORA). Altitude circa 4,500 feet. Collecting was carried on in the neighbourhood of the Ushora River which lies about fifty miles west and slightly north of Singida, Singida district, Central Province, Tanganyika Territory. A region close to the eastern edge of the Wembere Flats, dry country in which mimosa and acacia are dominant; along the sandy river bed (dry at the time of our visit) were many bussu palms.

USURWE (USSURE). Altitude 4,691 feet. Perhaps USURE is the more correct spelling of this populous village of scattered kraals situated in the Singida district of the Central Province of Tanganyika Territory. It is thirty-five miles due west of Singida township and in precisely similar country except that there are no large bodies of water in the vicinity. It is on the Kulusi (Ikulusi) River.

WAMI RIVER. Altitude circa 1,300 feet where collecting was done. This is a really important river which empties into the Indian Ocean at Sadani, north of Bagamoyo, Tanganyika Territory. Birds bearing this locality, however, were collected at a point thirty to forty miles northwest of Morogoro in country essentially similar to the flats below Morogoro township.

WEMBERE FLATS (WAEMBERE STEPPE). Altitude circa 3,500 feet. In the Tabora district, Tabora Province, Tanganyika Territory; their southern end about eighty miles due west of Tabora and extending northwards nearly to Lake Eyasi. These plains were crossed between Ushora and Tambali at a time when water was unobtainable necessitating an all-night march. During the rainy season these flats are flooded and game is abundant.

ZENGERAGUSU. Altitude circa 4,500 feet. Camp was made in open miombo bush and forest two miles north of the few scattered kraals which are known by the name Zengeragusu, Singida district, Central Province, Tanganyika Territory. Water was obtained from a pool in the otherwise dried-up river bed; the ground round about this pool for a radius of a hundred yards was a maze of lion and leopard tracks.

# Superorder PALAEOGNATHAE
# Order STRUTHIONIFORMES
## Family STRUTHIONIDAE. Ostriches

### Struthio camelus massaicus Neumann

*Struthio massaicus* Neumann, Journ. f. Ornith., **46**, 1898, p. 243: Ukamba, Kenya Colony.

1 egg, Kimamba, near Kilosa, Tanganyika Territory, 1921, collected by native.

This egg from Kimamba is very different from three of the more northern race *molybdophanes*. It is more ovate (long diameter relatively shorter) and is less pitted, the pits being small and without brownish pigment while in the other three the pits are large, deep, and brownish in color, giving the eggs a flecked appearance.

The Masai ostrich occurs in Tanganyika Territory and Southern Kenya Colony, north to the Tana River.

### Struthio camelus molybdophanes Reichenow

*Struthio molybdophanes* Reichenow, Mitt. Orn. Ver. Wien, 1883, p. 202: Somaliland.

3 eggs, Western foothills of Mt. Kenya, Kenya Colony.

The subspecific identification of these eggs is based on geographic grounds. This form is the one recorded from the Kenya region.[1]

The Somali ostrich ranges from the Tana River north to Gallaland and Somaliland.

# Superorder NEOGNATHAE
# Order COLYMBIFORMES
## Family COLYMBIDAE. Grebes

### Poliocephalus ruficollis capensis (Salvadori)

*Podiceps capensis* Salvadori, Ann. Mus. Civ. Genova (2), **1**, 1884, p. 252: Shoa.

1 ♂, 1 ♀, Kilosa, Tanganyika Territory, 18 April 1921.
1 immature ♂, Kilosa, Tanganyika Territory, 23 June 1921.

The adult ♂ is darker and larger than the ♀. The ♀ was shot while trying to decoy from the nest and clutch of eggs. Van Someren[2]

[1] cf. van Someren, Nov. Zool., **29**, 1922, p. 4—Archer's Post.
[2] Nov. Zool., **29**, 1922, p. 4.

writes that in all his adult specimens the underside is pure white, lacking the black mottling of the northern birds. The two adults from Kilosa (breeding birds) have the breast, sides, and flanks mottled but the rest of the underparts pure white.

The amount of white in the wings varies somewhat in the series in the Museum of Comparative Zoölogy.

The young bird has the sides of the head and neck white with heavy dark grayish brown malar and ocular stripes, the gray brown of the top of the head projecting ventrally as a band which is practically continuous across the lower throat, separating the white of the throat (splotched with brownish) from the immaculate underparts of the body.

The African little grebe occurs locally throughout the regions under consideration in this report.

## Order PELICANIFORMES

### Family PHALACROCORACIDAE. Cormorants

#### Phalacrocorax carbo lucidus (Lichtenstein)

*Halieus lucidus* Lichtenstein, Verz. Doubl., 1823, p. 86: Cape of Good Hope.

1 ♂, Lasicalet, Buddu Uganda, 29 August 1919.

The soft parts are recorded as follows: iris yellow; feet black; bill gray, upper bill black.

This race is not recorded from Uganda by van Someren[1], who even states that it does not occur on the inland lakes, or by Sclater.[2]

The specimen has the white underparts of immaturity.

#### Phalacrocorax carbo lugubris Rüppell

*Phalacrocorax lugubris* Rüppell, Syst. Uebers., 1845, p. 134, pl. L: Ethiopia.

1 ♂, 1 ♀, Mwanza, Tanganyika Territory, 2 December 1922.

The male is immature and has the entire underparts white, most of the feathers tipped with dark brown, giving it a very spotted appearance. The female has just come into adult plumage and still has a considerable mixture of black and white on the breast, while the entire underside of the neck is whitish washed and spotted with light brownish.

[1] Nov. Zool., **29**, 1922, p. 5; **37**, 1932, p. 253.
[2] Syst. Avium Ethiop., pt. 1, 1924, p. 20.

Dr. van Someren[1] notes that the bare skin of the throat is more extensive in this race than in *lucidus*, an observation the specimens in the series examined fail to confirm.

PHALACROCORAX AFRICANUS AFRICANUS (Gmelin)

*Pelecanus africanus* Gmelin, Syst. Nat., **1**, pt. 2, 1789, p. 577: Africa.

1 ♂, 1 ♀, Dar es Salaam, Tanganyika Territory, 19 November 1918.

The female is immature.

This bird is found throughout eastern Africa.

## Family ANHINGIDAE. Snake-birds

ANHINGA RUFA RUFA (Lacépède and Daudin)

*Plotus rufus* Lacépède and Daudin, in Buffon's Hist. Nat. (18 mo Didot ed.) Quadr., **14**, p. 319; Ois, **17**, 1802, p. 81: Senegal (ex Daubenton, Pl. Enl. 107).

1 ♂, 1 ♀, Dar es Salaam, Tanganyika Territory, 7 November 1918.

"Fairly common at Dar es Salaam and on Lake Victoria." (A.L.)

While not recorded at Mombasa by van Someren, it probably occurs there, and I have seen it at Kisumu, Kenya Colony, although van Someren does not include it in his 1922 list of Kenya birds. In a more recent paper,[2] however, he states that it is very common on all the lakes and rivers of Kenya Colony and Uganda.

The male is darker on the top of head and neck than the female, but is brownish, not blackish below.

# Order CIRCONIIFORMES

## Family ARDEIDAE. Herons, Bitterns

ARDEA CINEREA CINEREA Linnaeus

*Ardea cinerea* Linnaeus, Syst. Nat. 10th ed., 1758, p. 143: Europe: restricted type locality, Sweden.

1 ♂, Dar es Salaam, Tanganyika Territory, 19 November 1918.

1 ♂, Kilosa, Tanganyika Territory, 6 July 1921.

1 ♀, Sagayo, Tanganyika Territory, 7 November 1922.

"A male at Dar es Salaam on 5 July 1918 was the only other specimen shot." (A.L.)

[1] Nov. Zool., **29**, 1922, p. 5.

[2] Nov. Zool., **37**, 1932, p. 254.

The female is not fully adult and has much gray on the top of the head and black streaks on the lower neck and breast. It was shot at 2 A. M. on a moonlight night while fishing in a little body of water.

Widely distributed throughout the areas under discussion in this report.

### Ardea melanocephala Vigors and Children

*Ardea melanocephala* Vigors and Children, in Denh. and Clapp, Trav. **2**, App. xxi, 1826, p. 201: probably near Lake Chad.

1 ♂, Morogoro, Tanganyika Territory, 29 November 1918.
1 ♀, Tabora, Tanganyika Territory, 13 December 1918.

"Also Dar es Salaam, Kilosa, Sagayo. Probably the commonest species in Tanganyika Territory." (A.L.)

The female is slightly smaller than the male and lacks the long occipital plumes.

On 13th of December Loveridge found the black-headed heron nesting in a large tree in the middle of a cultivated area near Tabora.

### Ardea goliath Cretzschmar

*Ardea goliath* Cretzschmar, in Rüpp. Atlas, 1826, p. 39, pl. xxxvi: Bahhar Abiad, that is, White Nile.

1 ♂, Tindiga, Tanganyika Territory, 15 August 1922.

"The above specimen was the only one seen in Kilosa District; the species is decidedly scarce in the Territory except at Bahi after the big rains." (A.L.)

The underparts are streaked with rufous, gray and white, although the upperparts look mature, indicating that the bird was not yet adult at the time of its death.

Two adults from Kenya Colony have the lower mandible more yellowish, that is, the yellow color more extensive, than the Tindiga bird.

### Pyrrherodia purpurea purpurea (Linnaeus)

*Ardea purpurea* Linnaeus, Syst. Nat., 12th ed., **1**, 1766, p. 236: "in Oriente."

1 immature ♀, Dar es Salaam, Tanganyika Territory, 27 January 1919.
1 adult ♀, Kilosa, Tanganyika Territory, 23 June 1921.
1 adult ♂, Kilosa, Tanganyika Territory, 6 July 1921.

"Also Tindiga; seen at Morogoro. A common species." (A.L.)

The immature bird has the underparts of the body pale tawny, and lacks the long black stripes on the neck. The male is larger than the female and (to judge by dried skins) has darker legs and less white on the breast. A male from Akaba, Arabia, is slightly paler below.

The young bird is less rufous than one of comparable age from South Africa and has a slightly shorter wing than the latter.

### Casmerodius albus melanorhynchus (Wagler)

*Ardea melanorhynchos* Wagler, Syst. Av. Additamenta (last page), 1827: Senegambia.

1 ♂, Morogoro, Tanganyika Territory, 17 July 1917.
1 ♂, Morogoro, Tanganyika Territory, 24 November 1917.

This bird and the typical European form which migrates to north Africa are often confused and all records of the species from tropical Africa probably belong to this, the resident form. The two may be easily identified by the color of the bare portion of the tibia—yellow in typical *albus*, and black like the tarsometatarsus in *melanorhynchus*.

Care must be taken in using this character, as van Someren[1] points out that the young of both forms have black legs.

The African great white egret occurs in suitable places throughout Eastern Africa.

### Mesophoyx intermedius brachyrhynchus (Brehm)

*Herodias* (*Egretta*) *brachyrhynchus* Brehm, Journ. f. Ornith., 1858, p. 471: Blue Nile.

1 ♀, Kilosa, Tanganyika Territory, 28 June 1921.
"Also seen at Dar es Salaam." (A.L.)

This specimen agrees with the description of this race. It has a shorter bill than any example of typical *intermedius* from China and Borneo in the Museum of Comparative Zoölogy, but I have no comparative African material.

It is widely distributed in Eastern Africa.

### Melanophoyx ardesiaca (Wagler)

*Ardea ardesiaca* Wagler, Syst. Av., Ardea, no. 20, 1827: Senegambia.

1 ♂, Dar es Salaam, Tanganyika Territory, 1 July 1918.

[1] Nov. Zool., **37**, 1932, p. 256.

Dr. van Someren[1] writes of this species, "common on the coast of Tanganyika Territory. A few extending to the Pangani region," and records another specimen taken by Loveridge at Dar es Salaam.

### Egretta garzetta garzetta (Linnaeus)

*Ardea garzetta* Linnaeus, Syst. Nat., 12th ed., **1**, 1766, p. 237: "in Oriente."

1 ♂, 1 ♀, Dar es Salaam, Tanganyika Territory, 27 June 1918.

Both specimens have the plumes on the back well developed. The male also has long plumes around the base of the neck and the long occipital plumes as well.

Although specimens were collected only on the coast, the species ranges inland throughout the territory.

The little egret is a fairly common bird in eastern Africa.

### Bubulcus ibis (Linnaeus)

*Ardea ibis* Linnaeus, Syst. Nat., 10th ed., 1758, p. 144: Egypt.

1 ♂, 1 ♀, Morogoro, Tanganyika Territory, 31 January 1918.
1 ♂, 1 ♀, Dar es Salaam, Tanganyika Territory, 18 November 1918.

"Seen at Kilosa, Tabora, and Mwanza. Very common." (A.L.)

The specimens from Dar es Salaam are in breeding plumage; the two from Morogoro are not. The buffy feathers on the breast, top of head, and the dorsal plumes are darker in the female than in the male.

The buff-backed heron is one of the most abundant and widely distributed members of its family in Africa.

### Ardeola ralloides (Scopoli)

*Ardea ralloides* Scopoli, Annus, **1**, Hist. Nat., 1769, p. 88: Carniola.

1 ♂, 1 ♀, Kilosa, Tanganyika Territory, 29 June 1921.

Both specimens are not yet adult, having black shafts to the primaries. The female has the shortest wing and tarsus of any bird in a series of eleven. Its measurements are as follows—wing 187 (as against 195–207 for other females); tail 69 (as against 70.5 to 74); culmen 58.5 (as against 57–60); tarsus 51 (as against 53–56 mm.).

[1] Nov. Zool., **29**, 1922, p. 9.

### Ardeola idae (Hartlaub)

*Ardea idae* Hartlaub, Journ. f. Ornith., 1860, p. 167: Madagascar.

1 ♀, Dar es Salaam, Tanganyika Territory, 15 June 1918.

"A second individual was seen among the mangroves on the shore during the same month." (A.L.)

As far as I know, this is the first record for this species in Tanganyika Territory. It has been recorded in Kenya Colony (Nairobi and Kijabe) and even as far inland as Mount Elgon (Granvik[1]). Its occurrence along the east coast of Africa is not surprising but the bird can hardly be either common or even regular there.

### Butorides striatus atricapillus (Afzelius)

*Ardea atricapilla* Afzelius, Kongl. Vet.-Akad. nya Handl. Stockh., **25**, 1804, p. 264: Sierra Leone.

1 ♂, 1 ♀, Dar es Salaam, Tanganyika Territory, 15 June 1918.
1 ♂, Lumbo, Mozambique, 31 July 1918.
1 immature ♂, Kilosa, Tanganyika Territory, 7 July 1921.

The bird from Lumbo, Mozambique, has all the wing coverts much greener than either of the Dar es Salaam specimens, and is also larger than either of them. The bird from Kilosa, an immature specimen in brownish, streaked plumage, has a longer bill than either of the two adults from Dar es Salaam.

### Nycticorax nycticorax nycticorax (Linnaeus)

*Ardea nycticorax* Linnaeus, Syst. Nat., 10th ed., 1758, p. 142: south Europe.

1 ♂, 1 ♀, Tindiga, Tanganyika Territory, 25 January 1922.

"These two were the only birds of this species observed. A large area around Tindiga had been inundated by exceptionally heavy rains and these and other water birds not usually present, put in their appearance." (A.L.)

These two birds have considerably larger, heavier bills and longer tarsi than any of a long series from Africa, Europe, and Asia. They

[1] Journ. f. Ornith., 1923, Sonderheft, p. 46.

may represent an undescribed local race of this heron. Chinese birds average bluer, less greenish, above than European and African examples. It seems as though there may be two forms of *nycticorax* in Africa, a heavy-billed, long-legged, resident race of which these two are specimens, and a migratory race, the typical European form. However, the present species is not especially noted for its migratory habits and without more African material, I prefer not to separate a local tropical East African race.

### Ixobrychus minutus minutus (Linnaeus)

*Ardea minuta* Linnaeus, Syst. Nat., 12th ed., **1**, 1766, p. 240: Switzerland.

1 ♀, Kilosa, Tanganyika Territory, 19 April 1921.
1 ♂, Kilosa, Tanganyika Territory, 24 April 1922.

The male is considerably larger than the female and is less heavily streaked on the flanks and lower breast. The female also has a few streaks of deep rufous on the forehead while the male has that region solid black in color.

### Ixobrychus minutus payesii (Hartlaub)

*Ardea payesii* Hartlaub, Journ. f. Ornith., 1858, p. 42 (ex Verreaux): Casamanse, Senegal.

1 ♀, Dar es Salaam, Tanganyika Territory, 20 January 1919.
1 ♀, Kilosa, Tanganyika Territory, 19 April 1921.
1 ♀, Mwanza, Tanganyika Territory, 7 December 1922.

The Kilosa specimen was shot on the same small swamp as the female *Ixobrychus minutus minutus* and on the same day, indicating that the European migrants mingle with the resident form during their stay in Africa.

The bird from Dar es Salaam is much whiter on the lower throat, and particularly on the abdomen than the specimen from Kilosa. The latter has more rufous on the forehead and anterior portion of the crown than the former, a character, which, together with the lesser amount of white on the underparts, may indicate greater immaturity. The Mwanza bird is redder above than either of the others.

## Family SCOPIDAE. Hammerheads

### Scopus umbretta bannermani C. Grant

*Scopus umbretta bannermani* C. Grant, Bull. Brit. Orn. Cl., **35**, 1914, p. 27: Mt. Leganisho, Kenya Colony.

1 ♀, Morogoro, Tanganyika Territory, 7 January 1918.
1 ♂, Dar es Salaam, Tanganyika Territory, 28 June 1918.

"Also one from Mkata River. A common species in the Territory." (A.L.)

These two specimens are the smallest of a series of twenty-one birds from various parts of Africa and Madagascar. The male has a wing of 304 mm., the female, 281 mm.

On 8 February at Dar es Salaam, Loveridge[1] found a nest from which the young had just flown, according to information received from natives.

In view of what Bates has written[2] it may be that *bannermani* is not distinct from *umbretta*, which is not the small bird of Upper Guinea as previously thought. The small western race is *S. u. minor* Bates.

## Family CICONIIDAE. Storks, Jabirus

### Ciconia ciconia ciconia (Linnaeus)

*Ardea ciconia* Linnaeus, Syst. Nat. 10th ed., 1758, p. 142: Europe, Asia, Africa; restricted type locality, Sweden.

1 ♂, 1 ♀, Morogoro, Tanganyika Territory, 7 January 1918.

"Also one in the Singida district. At the time the Morogoro birds were shot, myriads of these storks arrived in the wake of a swarm of locusts. Excepting on this occasion, I have rarely seen the birds and then only in small parties." (A.L.)

For a vivid description of the great host of storks in pursuit of the locust, the reader may be referred to Loveridge's account in the Proceedings of the Zoological Society of London, 1922, page 861.

[1] Proc. Zool. Soc. Lond., 1922, p. 861.
[2] Ibis, 1931, pp. 300-302.

### Sphenorynchus abdimii (Lichtenstein)

*Ciconia abdimii* Lichtenstein, Verz. Doubl. 1823, p. 76: near Dongola, Sudan.

1 unsexed, Morogoro, Tanganyika Territory, 19 February 1918.
1 unsexed, Tabora, Tanganyika Territory, 18 November 1921.

"Also Simba and Sagayo. Flocks appear in the Tabora and Mwanza districts with the advent of the rains." (A.L.)

The Morogoro specimen is immature and is brownish with relatively little purplish and greenish sheen on the upperparts. It is molting into adult plumage but is quite small in size—wing 390, tail 155; culmen 98 mm., while the Tabora bird (an adult) has the following measurements—wing 444; tail 178; culmen 117 mm.

### Anastomus lamelligerus lamelligerus Temminck

*Anastomus lamelligerus* Temminck, Pl. Col. livr. 40, pl. ccxxxvi, 1823: Senegal.

1 ♂, 1 ♀, Kilosa, Tanganyika Territory, 2 April 1921.

"Also a pair from Kipera. Seen at Morogoro, and at Nyeri in Kenya Colony." (A.L.)

The male is considerably larger than the female. Neither are fully adult and neither have any pinkish sheen on the wing coverts. The female from Kipera (adult) is larger than the Kilosa female, but the males from the two localities agree in size although one (Kipera) is fully adult and the other is not.

While with the Smithsonian-Chrysler Expedition, Loveridge collected an immature female (now in the United States National Museum) at Dodoma, Tanganyika Territory, 2 July 1926.

### Ephippiorhychus senegalensis (Shaw)

*Mycteria senegalensis* Shaw, Trans. Linn. Soc. London, **5**, 1800, p. 35, pl. xxxiii: Senegal.

1 ♂, Tindiga, Tanganyika Territory, 8 July 1921.

"The only others seen were a pair of Kipera and another pair at Kilimatinde until 1926 when many were seen in flooded country south of Bahi." (A.L.)

The specimen is fully adult and in fine plumage.

### Ibis ibis (Linnaeus)

*Tantalus ibis* Linnaeus, Syst. Nat. 12th ed., **1**, 1766, p. 241: Egypt.

1 immature ♀, Tindiga, Tanganyika Territory, 26 September 1921.
1 immature ♂ (?), Sagayo, Tanganyika Territory, 7 November 1922.

Both birds are lighter, more grayish, less brownish above than an immature female from Meru River, Kenya Colony. The latter has a shorter bill than the Tindiga bird, but in other measurements the two agree quite closely.

## Family THRESKIORNITHIDAE. Ibises, Spoonbills

### Threskiornis aethiopicus aethiopicus (Latham)

*Tantalus aethiopicus* Latham, Index Orn., **2**, 1790, p. 706: Ethiopia, probably Egypt (cf. Bruce, Travels, **5**, append. i, 1790, p. 172, pl. xxxv).

1 adult ♀, Nairobi, Kenya Colony, 12 October 1915.
1 adult ♂, Tindiga, Tanganyika Territory, 21 September 1921.
1 immature ♂, Mbulu's, Tanganyika Territory, 12 October 1921.

"A very common species in suitable localities; large flocks roosted in company with the kites and crows in a big tree at Shanwa. The immature male has the neck well feathered; the Tindiga male still retains some feathers; the female is fully adult." (A.L.)

In the immature bird the feathers on the chin, throat, and underside of the neck are mostly white, with a very few dark grayish black ones showing here and there, while the feathers of the top of the head, nape, and dorsum of the neck are mostly blackish or grayish-black much mixed with white. The feathers of the crown are blackish-gray completely margined with white. The bird is not quite full grown, the chord of the culmen being 157 mm., in length as opposed to 184 mm., in the Tindiga male.

### Hagedashia hagedash erlangeri Neumann

*Hagedashia hagedash erlangeri* Neumann, Ornis, **13**, 1909, p. 193: Dogge, south Somaliland.

1 ♂, Kipera, Tanganyika Territory, 5 August 1922.
1 ♀, Shanwa, Tanganyika Territory, 23 October 1922.

"Common along the Wami and Mkata Rivers in Morogoro district as well as in the vicinity of the Great Lakes." (A.L.)

The female from Shanwa is unusually large, the measurements being as follows: wing 351; culmen (not the chord) 160 mm.

In his review of the races of this bird Neumann[1] finds the wing in *erlangeri* (both sexes) to vary from 315 (!) to 370 mm., and the bill from 126 (!) to 150 mm. However, he notes that three birds from Uhehe and Lake Nyasa are larger; the culmen measuring 153 to 163 mm., and the wings 360 to 375 mm. Kipera is near Kilosa which is not so very far from northern Uhehe. It is therefore of more than passing interest to find the Kipera bird agreeing with those from the Uhehe country. Neumann refrained from naming the long-billed Uhehe birds because of limited material.

Recently van Someren[2] has advocated that the birds from Lake Naivasha and the Kilimanjaro area (Lake Jipe) are not true *erlangeri* and should be considered as a distinct race intermediate between it and *nilotica*. The present Tanganyikan birds would fit in with these south Kenyan specimens, but the difference between them and typical *erlangeri*, however, is too slight to justify recognition, especially as individual *erlangeri* elsewhere occasionally attain to even greater size, and the birds are probably intermediates between *erlangeri* and *nilotica*. The latter race was described from Ethiopia and its range given by Neumann as from central Ethiopia and Shoa to the While Nile, southwards to Uganda. Sclater[3] extends the range from Uganda ". . . perhaps to the country north of Lake Nyasa," apparently on the basis of Neumann's Uhehe and Nyasa specimens.

## Platalea alba Scopoli

*Platalea alba* Scopoli, Del. Flor. et Faun. Insubr., **2**, 1786, p. 92: Luzon! (ex Sonnerat), probably Cape of Good Hope.

1 ♀, Kilosa, Tanganyika Territory, 4 April 1921.
1 ♀ ?, Sagayo, Mwanza, Tanganyika Territory, 8 November 1922.

The Sagayo specimen is not adult, having much fuscous brown on the primaries. The bill is very short, the culmen measuring 160 mm. Judging from the two specimens listed above and from what Granvik[4] writes of an immature bird he collected, this species does not have red legs until fully adult. Young birds have blackish legs like *P. leucorodia*.

[1] Ornis, **13**, part iii, 1909, pp. 190-195.
[2] Nov. Zool., **37**, 1932, p. 255.
[3] Syst. Avium Ethiop., pt. 1, 1924, p. 36.
[4] Journ. f. Ornith., 1923, Sonderheft, p. 44.

Loveridge[1] recorded the specimen from Kilosa as *Platalea leucordia* by mistake. His notes on its food habits are of interest. " . . . its stomach contained the head of a large dragonfly (*Anax* sp.) and the plastron parts of a big beetle (? *Copris* sp.) together with a little green stuff. Its intestines were teeming with tapeworms (*Cyclorchida omalancristrota* (Wedl.) )."

### Family PHOENICOPTERIDAE. Flamingoes

#### Phoenicopterus ruber antiquorum Temminck

*Phoenicopterus antiquorum* Temminck, Man. d'Ornith., 2nd ed., **2**, 1820, p. 587: Europe.

1 ♂, Singida, Tanganyika Territory, 15 October 1921.

"Vast numbers of these birds form pink patches on the Singida lakes, but I have not met with them elsewhere." (A.L.)

The single specimen collected is an adult bird in fine plumage.

## Order ANSERIFORMES

### Family ANATIDAE. Ducks, Geese, Swans

#### Thalassornis leuconotus leuconotus Eyton

*Thalassornis leuconotus* Eyton, Monogr. Anat. 1838, p. 168: South Africa.

1 ♂, Kilosa, Tanganyika Territory, 18 April 1921.

The single specimen is very much more rufescent than any of a series from Uganda and one from South Africa in the Museum of Comparative Zoölogy. It also has the black patch on the upper throat much more restricted than in any of the others, and the top of the head is browner, less blackish than in the latter birds. The tail feathers are fuscous, narrowly edged with light tawny white in the Uganda and South African birds, while in the present specimen only a few are dark, the rest being cinnamon, and even those with fuscous centers are more broadly margined with cinnamon than are those in the other birds.

[1] Proc. Zool. Soc. Lond., 1923, p. 917.

### Spatula clypeata (Linnaeus)

*Anas clypeata* Linnaeus, Syst. Nat. 10th ed., 1758, p. 124: Europe; restricted type locality, s. Sweden.

1 ♀, Tindiga, Kilosa, Tanganyika Territory, 24 January 1922.

The European shoveler is said by Sclater[1] to winter south as far as Lake Hannington, Kenya Colony, and to have been recorded once from South Africa. The present specimen is the first one taken in Tanganyika Territory. The species is probably very uncommon in that country.

### Anas undulata undulata Dubois

*Anas undulata* Dubois, Orn. Gall., **1**, 1837, p. 119, pl. lxxvii: Cape of Good Hope.

1 ♀, Tumutumu, Kenya Colony, October 1920.

This specimen is somewhat intermediate between typical *undulata* and *rueppelli* but is nearer the former. The difference in the color of the speculum in the two races is not very striking and series are needed to determine the subspecific affinities of birds from Kenya Colony, Uganda, and northern Tanganyika Territory, all of which are more or less intermediate.

### Dafila erythrorhyncha (Gamelin)

*Anas erythrorhyncha* Gmelin, Syst. Nat., **1**, pt. 2, 1789, p. 517: Cape of Good Hope.

1 ♂, 1 ♀, Tabora, 11 December 1918.

"Also Singida. Large flocks were present in both localities." (A.L.)

These two specimens are very light and are washed with very pale tawny, giving them an appearance quite unlike any others in the Museum of Comparative Zoölogy. A female from Singida is much darker than the female from Tabora, and lacks the tawny wash, indicating that the present two specimens are not typical of birds from central Tanganyika Territory.

An immature male was taken by Loveridge at Dodoma, Tanganyika Territory, 2 July 1927. This bird, collected by the Smithsonian-Chrysler Expedition, is now in the United States National Museum.

[1] Syst. Avium Ethiop., pt. 1, 1924, p. 41.

### Dendrocygna viduata (Linnaeus)

*Anas viduata* Linnaeus, Syst. Nat. 12th ed., **1**, 1766, p. 205: Cartagena, Colombia.

1 ♂, 1 ♀, Kilosa, Tanganyika Territory, 8 August 1921.

"Flocks of from ten to twenty birds were met with at Tindiga and on other larger sheets of water formed during the rains." (A.L.)

Both birds have the black throat band continuous around the neck while a pair from the White Nile (Fashoda and Lake No) have it interrupted on the mid ventral line by a white stripe which connects the white lower throat with the white of the upper throat and chin.

### Dendrocygna fulva (Gmelin)

*Anas fulva* Gmelin, Syst. Nat., **1**, pt. 2, 1789, p. 530: Mexico.

1 ♂, 1 ♀, Mahaka, Dodoma, 14 March 1922.

The fulvous tree-duck occurs in suitable localities throughout the regions under consideration in this paper.

### Alopochen aegyptiacus (Linnaeus)

*Anas aegyptiacus* Linnaeus, Syst. Nat. 12th ed., **1**, 1766, p. 197: Egypt.

1 ♂, Kilosa, Tanganyika Territory, 24 June 1921.
1 immature ♂, Tindiga, Kilosa, Tanganyika Territory, 27 September 1921.
1 ♀, Singida, Tanganyika Territory, 25 October 1921.

"Not very numerous in the neighborhood of Kilosa." (A.L.)

This bird is found throughout Eastern Africa.

The immature bird has the brown pectoral spot small, light, and ill defined.

### Sarkidiornis melanonotus (Pennant)

*Anser melanonotus* Pennant, Ind. Zool., 1769, p. 12, pl. xi: Ceylon.

1 ♂, 1 ♀, Kilosa, Tanganyika Territory, 2 April 1921.
1 immature ♂, Kilosa, Tanganyika Territory, 4 July 1921.

"Very large flocks assemble at Tindiga during the rains. They are difficult to approach as they perch in isolated trees in the flooded areas. Apparently they feed in the rice plots as I have frequently flushed them from these." (A.L.)

PLECTROPTERUS GAMBENSIS GAMBENSIS (Linnaeus)

*Anas gambensis* Linnaeus, Syst. Nat. 12th ed., **1**, 1766, p. 195: Gambia.

1 immature ♂, 1 immature ♀, Kilosa, Tanganyika Territory, 6 August 1921.

1 ♂, Singida, Tanganyika Territory, 25 October 1921.

"Only small parties of two or three were met with in these localities. The immature birds are quite brown." (A.L.)

The young male has the spurs just appearing through the feathers.

## Order FALCONIFORMES

### Family ACCIPITRIDAE. Hawks, Old World Vultures

NECROSYRTES MONACHUS PILEATUS (Burchell)

*Vultur pileatus* Burchell, Travels, **2**, 1824, p. 195: country south of Orange River, that is, Hopetown district of Cape Province.

1 ♂, 1 ♀, Morogoro, Tanganyika Territory, 6 March 1917.

"Common at Dar es Salaam and throughout the Territory." (A.L.)

Neither of these two specimens are fully adult, both having some feathers on the top of the head. The female is less adult than the male in this respect.

MILVUS MIGRANS MIGRANS (Boddaert)

*Falco migrans* Boddaert, Tabl. Pl. Enl. p. 28, no. 472, 1783: no locality; France (Hartert).

2 adult ♂, 1 immature ♂, Sagayo, Tanganyika Territory, 27 October, 1922.

These three birds were shot out of a large flock and were erroneously referred to *M. m. parasitus* by Loveridge in the Proceedings of the Zoological Society of London, 1923, page 913. The specimens were determined as typical *migrans* by Dr. James P. Chapin. This is the first, and apparently the only record of this subspecies in tropical Eastern Africa. However, van Someren[1] writes of this bird that,

[1] Nov. Zool., **29**, 1922, p. 42.

" . . . numbers visit East Africa during the winter, but are merely birds of passage, not remaining longer than a week in any one place." No specimens were taken by him and it seems therefore that the birds were probably *M. m. parasitus*, of which he procured specimens in several localities in Kenya Colony and Uganda.

The only other records of this bird in the central and eastern parts of the Ethiopian region according to Sclater are Emin's, in the Lado district, and Chapin's in the Uele.

### Milvus migrans parasitus (Daudin)

*Falco parasitus* Daudin, Traité d'orn., **2**, 1800, p. 150: South Africa.

1 adult ♂, Morogoro, Tanganyika Territory, 4 December 1917.
1 immature ♂, 1 adult ♀, Morogoro, Tanganyika Territory, 23 February 1918.

"Also Dar es Salaam, Mtali's and Sagayo. Seen at Kilosa, Dodoma, and many other places." (A.L.)

The immature bird (♂) is unusually light below, the feathers being white with broad, dull earth-brown margins. The bill in this specimen is blackish, which, according to Nicoll's statements, would mean that the bird is in its first year.

### Elanus caeruleus caeruleus (Desfontaines)

*Falco caeruleus* Desfontaines, Hist. (that is, Mem.). Acad. Roy. Paris, for 1787, p. 503, 1789: near Algiers.

1 ♀, Nairobi, Kenya Colony, 5 November 1915.
1 ♂ ?, Nairobi, Kenya Colony, 25 December 1915.
1 ♀, Morogoro, Tanganyika Territory, 5 February 1918.

"Also Kilosa, Dodoma, Tabora, Tanganyika Territory, and Lumbo, Mozambique." (A.L.)

Both Nairobi birds are non-adult, the female being more mature than the other.

### Pernis apivorus apivorus (Linnaeus)

*Falco apivorus* Linnaeus, Syst. Nat. 10th ed., 1758, p. 91: Europe; restricted type locality, Sweden (Hartert).

1 ♀, Morogoro, Tanganyika Territory, 23 February 1918.
1 ♂, Ulugu, Ushora, Tanganyika Territory, 8 November 1921.

"Also one other female at Morogoro now in the Nairobi Museum." (A.L.)

The male is an adult in dark brown plumage. The female is immature and has the underparts white, each feather with a large terminal spot of light rufous brown giving the bird a banded appearance.

According to Hartert[1] this bird is very rare in East Africa. However, van Someren[2] collected the species at three localities in Kenya Colony since Hartert's statement was written, and it has been taken as far south as Mozambique and Natal.

### Aquila rapax rapax (Temminck)

*Falco rapax* Temminck, Pl. Col. livr. 76, pl. cccclv, 1828: South Africa.

1 ♂, Morogoro, Tanganyika Territory, 9 February 1918.
1 ♂, Dodoma, Tanganyika Territory, 6 December 1918.
1 ♀, Zengeragusu, Tanganyika Territory, 5 November 1921.

Hartert[3] writes that the dark adult plumage is not attained until the fifth or sixth year. The specimen from Zengeragusu is molting into this plumage. The two males are in the tawny fulvous plumage of relative immaturity.

Swann[4] gives the wing length for the female as 558 mm. The present female exceeds this having a wing length of 565 mm.

In the Kedong Valley, Kenya Colony, Loveridge[5] found two young eagles, just fledged, sitting on the rocks at the base of a towering cliff, where their nest evidently was.

### Aquila wahlbergi Sundevall

*Aquila wahlbergi* Sundevall, Oefv. K. Vet.-Akad. Förh. for 1850, p. 109, 1851: "Caffraria superiori prope 25 lat.," that is, western Transvaal.

1 ♂, Kilosa, Tanganyika Territory, 4 February 1921.
1 ♀, Chantwara, Bukoba, Tanganyika Territory, 8 January 1923.

"And was found nesting at Sagayo." (A.L.)

The male is molting into fully adult plumage.

[1] Vog. d. pal. Fauna, **2**, 1914, p. 1183.
[2] Nov. Zool., **29**, 1922, p. 42.
[3] Vog. d. pal. Fauna, **2**, 1914, p. 1095.
[4] Synopsis of Accipitres, 2nd ed., 1922, p. 110.
[5] Proc. Zool. Soc. Lond., 1922, p. 855.

### Hieraaetus spilogaster (Bonaparte)

*Spizaëtus spilogaster* Bonaparte, Rev. Mag. Zool., 1850, p. 487: Ethiopia.

1 ♂ ?, Kipera, Kilosa, Tanganyika Territory, 8 September 1922.

"This bird had a mouse and parasitic nematode in its stomach." (A.L.)

The bird has a wing of 412 mm., thereby agreeing in size with *spilogaster* and not with *ayresi*. Stresemann[1] has discussed the two species. They may easily be separated in all plumages as follows:

A. Outer webs of primaries 3–6 (counting from the outside) black . . . . . *ayresi*

AA. Outer webs of primaries 3–6 ashy gray or silver gray . . . . . *spilogaster*

This seems to be a rather scarce bird in collections. Lynes[2] observed it at Iringa, but not in the Ubena-Uhele highlands.

### Polemaetus bellicosus (Daudin)

*Falco bellicosus* Daudin, Traité, **2**, 1800, p. 38: Great Namaqualand, between 28° S. lat. and the Tropic.

1 immature ♂, Kilosa, Tanganyika Territory, 5 July 1921.

The young bird from the Usambara Mountains recorded by me[3] as of this species is really *Stephanoactus coronatus*.

The martial eagle occurs throughout the regions here under discussion. Van Someren[4] found it nesting in November in Chagwe Province, Uganda.

### Lophaetus occipitalis (Daudin)

*Falco occipitalis* Daudin, Traité, **2**, 1800, p. 40: The Anteniquoi country, that is, Knysna district, Cape Province.

1 ♀, Tindiga, Kilosa, Tanganyika Territory, 3 October 1921.

1 ♀, Chantwara, Bukoba, Tanganyika Territory, 8 January 1923.

[1] Nov. Zool., **31**, 1924, pp. 214–216.
[2] Jour. d. Orn., **82**, 1934, p. 44.
[3] Ibis, 1928, p. 75.
[4] Nov. Zool., **37**, 1932, p. 268.

Females of this species are browner, less blackish than males.

At Morogoro, Loveridge[1] found the crested eagle to be nesting in February. "The nest was situated in a tree at a height of 80 feet from the ground . . . It was quite impossible to reach the nest, not merely because there was not a branch for 60 feet up, but because a swarm of bees nearly two feet in length were under the junction of the first branch and the trunk, whilst a second swarm hung from the big limb on which the nest was placed . . ."

### Kaupifalco monogrammicus (Temminck)

*Kaupifalco monogrammicus* Temminck, Pl. Col., livr. 53, 1824, pl. cccxiv: Senegal.

1 ♀, Morogoro, Tanganyika Territory, 2 April 1917.
1 ♂, Morogoro, Tanganyika Territory, 9 July 1917.

"Also Kimamba and Kilosa." (A.L.)

Those from the last locality were two immature birds.

### Circaetus cinereus Vieillot

*Circaetus cinereus* Vieillot, N. Dict. d'Hist. Nat., **23**, 1818, p. 445: Senegal.

1 ♂, Kongwa, near Mpwapwa, Tanganyika Territory, 21 April 1917.
1 ♀, Mtali's near Mkalama, Tanganyika Territory, 19 October 1921.

"The female had snake scales in its stomach." (A.L.)

### Circaetus pectoralis Smith

*Circaetus pectoralis* A. Smith, S. Afr. Quart. Journ. 1st ser., 1830, p. 109: South Africa.

1 ♂, Morogoro, Tanganyika Territory, 8 June 1917.

An adult bird in fine plumage.

Swann[2] gives wing measurements only for the female. The present specimen has a wing length of 497 mm.

This bird is apparently uncommon in Tanganyika Territory, judging by the paucity of records and specimens, but Lynes[3] found it

[1] Proc. Zool. Soc. Lond., 1922, pp. 855–856.
[2] Synopsis of Accipitres, 1922, p. 126.
[3] Journ. f. Orn., **82**, 1934, Sonderheft, p. 45.

rather common at Iringa and in the Ubena-Uhehe highlands. In Kenya Colony van Someren[1] records specimens from Jubaland, Lamu, Kyetume and Nairobi.

Stresemann[2] makes *pectoralis* a race of *gallicus*. The other extreme of taxonomic opinion is expressed by Roberts who has erected a new subgenus, *Smithaetus*, for it (and *gallicus* is the genotype of *Circaetus*).

### Circaetus fasciolatus Gurney

*Circaetus fasciolatus* Gurney, Ibis, 1861, p. 130: ex Gray, Cat. Acciptr. Brit. Mus., 1848, p. 18: Natal (nom. nud.).

1 ♂, Mkindo River, Tanganyika Territory, 7 September 1921.

The distribution of this hawk as given by Sclater[3] is somewhat misleading. He writes that it occurs from Natal north to Nyasaland and the coastlands of Tanganyika Territory. It also occurs inland in Tanganyika Territory, as far north as Mwanza (according to Reichenow). It is true that it is a scarce bird in the interior of Tanganyika, but it is not common anywhere.

### Butastur rufipennis (Sundevall)

*Poliornis rufipennis* Sundevall, Oef. K. Vet.-Akad. Förh. for 1850, p. 131, 1851: near Khartoum.

1 ♀, Morogoro, Tanganyika Territory, 28 January 1918.
1 ♂, Morogoro, Tanganyika Territory, 31 January 1918.

"Also Dodoma, 22 December 1918." (A.L.)

The ventral streaks are much heavier in the female than in the male, and the general tone of the underparts darker.

Van Someren[4] lists Morogoro as a locality for this species on the basis of some of Loveridge's birds without stating the source of his data. These specimens constitute the southernmost records for the species, a considerable extension over Reichenow's[5] data.

[1] Nov. Zool., **37**, 1932, p. 268.
[2] Orn. Monatsb., 1924, pp. 165–166.
[3] Syst. Avium Ethiop., pt. 1, 1924, p. 64.
[4] Nov. Zool., **29**, 1922, p. 42.
[5] Vog. Afrikas, **1**, 1907, p. 597.

### Terathopius ecaudatus (Daudin)

*Falco ecaudatus* Daudin, Traité, **2**, p. 54, 1800: Pays d'Anteniquoi, that is, Knysna district, Cape Province.

1 ♀, Kimamba, Tanganyika Territory, 22 August 1921.

"Also seen at Eldoret, Kenya Colony; Morogoro; Sagayo; and very commonly at Kilosa, Tanganyika Territory." (A.L.)

The specimen is not fully adult.

### Cuncuma vocifer vocifer (Daudin)

*Falco vocifer* Daudin, Traité, **2**, 1800, p. 65: Keurboom River, Cape Province (ex Levaillant).

2 adult ♂, 1 adult ♀, 1 immature ♀, Kome Island, Mwanza, Tanganyika Territory, 23 November 1922.

"Also seen at Mombasa, Kenya Colony, and on swamps near Kilosa, Tanganyika Territory." (A.L.)

### Buteo buteo vulpinus (Gloger)

*Falco vulpinus* Gloger, Abänd. Vög. durch Einfl. des Klima's, 1833, p. 141 Africa ex Lichtenstein MS in Berlin Museum.

1 ♀, Morogoro, Tanganyika Territory, 31 January 1918.
1 unsexed, Morogoro, Tanganyika Territory, 20 February 1918.
1 ♂, Morogoro, Tanganyika Territory, 30 November 1918.
1 ♂, Isikisia, Tanganyika Territory, 16 November 1921.

The unsexed bird from Morogoro is immature and is in the plumage that had been known as *B. desertorum* until it was shown that *desertorum*, *anceps*, and *rufiventer* were all plumages of this hawk. The other three specimens are in the "*rufiventer*" plumage, but the female is somewhat darker than either of the two males.

### Buteo rufofuscus augur (Rüppell)

*Falco* (*Buteo*) *augur* Rüppell, N. Wirbelth., Vög., 1836, p. 38, pl. xvi: Ethiopia.

1 ♀, Mtali's, Mkalama, Tanganyika Territory, 20 October 1921.
1 ♀, Shanwa, Mwanza, Tanganyika Territory, 23 October 1921.
1 ♂, 1 ♀, Dodoma, Tanganyika Territory, 20 November 1921.

"Also Kabare and Chantwara." (A.L.)

The female from Dodoma is immature and has the tail brownish, narrowly barred with darker brown. All the specimens are in the normal phase (white underparts).

The female taken at Shanwa was shot off a nest with two eggs. The bird is in subadult plumage, thereby indicating that the species breeds before attaining fully adult feathering.

### Accipiter minullus (Daudin)

*Falco minullus* Daudin, Traité, **2**., 1800, p. 88: Gamtoos River, Cape Province (ex Levaillant).

1 ♂ ? (= ♀), Parklands, Nairobi, Kenya Colony, 8 October 1915.

The single specimen obtained is labeled as a male (with a query) but is almost certainly a female, being much larger than two males from nearby localities. It is slightly darker than the males and has more rufous on the sides. Its measurements are as follows: wing 159; tail 128; culmen from cere 10.5 mm.

Neither of the races of this species (*tropicalis* and *intermedius*) is any good. The form *erythropus* is a distinct species.

### Accipiter ovampensis Gurney

*Accipiter ovampensis* Gurney, Ibis, 1875, p. 367, pl. vi: Okavango River.

Although no specimens of this hawk are included in the main Loveridge collections, I list it here on the basis of a specimen (labeled ♂, but probably ♀ to judge from size) taken by Loveridge while on the Smithsonian-Chrysler Expedition at Saranda, Dodoma, Tanganyika Territory, 15 July 1926.

I have seen no comparative material, but the bird agrees with the description given by Reichenow.[1]

### Astur badius polyzonoides (Smith)

*Accipiter polyzonoides* A. Smith, Ill. Zool. S. Afr. Aves, pl. ii, 1838: "N. of 26° S. lat.," probably near Mafeking.

1 ♀, Morogoro, Tanganyika Territory, 12 July 1917.
1 immature ♂, Morogoro, Tanganyika Territory, 14 July 1917.
1 immature ♀, Morogoro, Tanganyika Territory, 26 March 1918.
1 ♀, Kilosa, Tanganyika Territory, 7 January 1921.

[1] Vog. Afrikas, **1**, 1901, p. 560.

Besides the four birds listed above, three other specimens were obtained, of which two are now in the Museum of the Academy of Natural Sciences of Philadelphia. Two are immature ♀ ♀ from Bagilo, Uluguru Mountains, and Kilosa respectively. The third specimen was taken at Dar es Salaam 21 July 1918.

There is considerable difference of opinion as to the status of *polyzonoides*, Swann[1] regarding it as a species, while Sclater, Stresemann, and others consider it a race of *A. badius*. The material available in the Museum of Comparative Zoölogy leads me to regard it as the southern form of *badius*. It is, however, an unusually well marked race. The present records are among the northernmost, if not actually the most northern, for the subspecies and yet they are typical *polyzonoides*, in no way approaching *sphenurus*.

The immature birds have the brown markings on the undersides lighter, more cinnamomeus than do comparable plumages of *sphenurus*.

### Astur tachiro sparsimfasciatus Reichenow

*Astur sparsimfasciatus* Reichenow, Orn. Monatsb., **3**, 1895, p. 97: Zanzibar.

1 adult ♂, Nairobi, Kenya Colony, 20 October 1915.
1 adult ♀, Morogoro, Tanganyika Territory, 20 November 1917.
1 juvenal ♂, Morogoro, Tanganyika Territory, 13 December 1917.
1 adult ♂, Kabare, Bukoba, Tanganyika Territory, 12 January 1923.

All the so-called east African forms of this hawk—*tenebrosus*, *nyansae*, *aceletus*, and *orienticola*—seem to be nothing but individual variations of *sparsimfasciatus*.

The adult female from Morogoro is lighter than typical *tachiro* and slightly more so than the so-called *nyanzae*. Van Someren[2] lists typical *tachiro* from Taveta, Kenya Colony, but on the face of the facts of the distribution of *sparsimfasciatus*, it seems probable that his specimen belongs to the latter form.

The adult female was breeding when shot. It had a nest in a thorn tree, and in the nest were two young, one of which was hand-reared by Loveridge and then skinned on 13 December. It is the juvenal male referred to above.

The male from Bukoba was just acquiring adult plumage. Some of the old upper wing coverts are still present, as well as a few of the heavily barred flank feathers which seem very striking in contrast to

[1] Monog. Bds. of Prey, part iv, 1925, p. 220.
[2] Nov. Zool., **29**, 1922, p. 40.

the fine bars on the feathers of the breast and anterior abdomen. The thighs, lower abdomen, and under tail coverts are lightly and narrowly banded with brownish gray. The upper tail coverts have heavy brownish terminal bands. The Nairobi bird is fully adult and has the barring of the underparts (including the thighs and flanks) heavier and redder than in the bird from Bukoba. It has the under tail coverts pure white as does the female from Morogoro.

### Melierax musicus poliopterus Cabanis

*Melierax poliopterus* Cabanis, in von der Decken's Reise, **3**, Vög., 1869, p. 40: Umba River on the boundary of Kenya Colony and Tanganyika Territory.

1 ♀, Saranda, Tanganyika Territory, 6 October 1921.

"Also a male at Kinyambwa and a female from Dodoma." (A.L.)

The bird is an adult, with uniform, blackish primaries.

### Melierax metabates metabates Heuglin

*Melierax metabates* Heuglin, Ibis, 1861, p. 78: White Nile between 6° and 7° N. lat.

1 immature ♂, Eldoret, Kenya Colony, 9 November 1920.
1 immature ♂, Ulugu, Usshoro, Tanganika Territory, 7 November 1921.
1 ♀, Mwadira, Mwanza, Tanganyika Territory, 19 October 1922.
1 ♂ ?, near Nyambita, Mwanza, Tanganyika Territory, 10 November 1922.
1 immature ♂, Ndala, near Tabora, Tanganyika Territory, 15 November 1922.

"Only one other bird of this race was shot—a female at Nyambita."

"The immature bird from Ulugu had swallowed two lizards (*Eremias spekii spekii*) while the male from Ndala had an agama and some grasshoppers in its stomach." (A.L.)

The male from Ndala is interesting in that it has the central tail feathers uniform fuscous, without any sign of barring. Of the three immature males collected, the two from Tanganyika Territory are considerably darker than the one from Kenya Colony. The bird from Ulugu was just beginning to molt into adult plumage when collected.

These specimens greatly extend the range of this species. Both Swann[1] and Sclater[2] give its range as Northeastern Africa to Southern

[1] Synopsis of Accipitres, 1922, p. 30.
[2] Syst. Avium Ethiop., pt. 1, 1924, p. 72.

Sudan, Ethiopia, and Southern Arabia; and Northern Nigeria. Van Someren[1] lists it for Uganda (Turkana district) but not for Kenya Colony, but in a later paper[2] indicates that it does occur in the latter country as well. Granvik[3] found it very common in the Steppe country north of Mt. Elgon.

### Melierax gabar (Daudin)

*Falco gabar* Daudin, Traité, **2**, 1800, p. 87: interior of South Africa (ex Levaillant).

1 adult ♀, Morogoro, Tanganyika Territory, 2 June 1917.
1 adult ♂, Morogoro, Tanganyika Territory, 5 June 1917.
1 adult ♂, Morogoro, Tanganyika Territory, 9 August 1917.
1 immature ♂, Ikikuyu, Dodoma, Tanganyika Territory, 12 February 1923.

"Also Kilosa, Zengeragusu, and Sagayo." (A.L.)

The male taken at Morogoro, 5 June 1917, is a melanistic specimen (the so-called form *niger*). It is somewhat smaller than the two normal males collected.

The validity of *niger* as a north Sudanese race is still open to question.

### Circus macrourus (Gmelin)

*Accipiter macrourus* S. G. Gmelin, N. Comm. Acad. Petrop., **15**, 1771, p. 439, pls. viii, ix: Veronetz Gouv. to the Volga.

1 immature unsexed, Morogoro, Tanganyika Territory, 28 February 1918.

"Also Dar es Salaam, 28 January 1919." (A.L.)

Judging by its small size (wing 360 mm.) the specimen seems to be a male.

### Circus aeruginosus aeruginosus (Linnaeus)

*Falco aeruginosus* Linnaeus, Syst. Nat. 10th ed., 1758, p. 91: Europe; restricted type locality, Sweden.

1 ♂, Dar es Salaam, Tanganyika Territory, 28 January 1919.

The crown is unusually white in this specimen, less creamy buff than

[1] Nov. Zool., **29**, 1922, p. 39.
[2] Nov. Zool., **37**, 1932, p. 266.
[3] Rev. Zool. et Bot. Afr., **25**, 1934, p. 12.

in most birds. The bird is, however, in worn plumage, which may account for this difference.

### Circus ranivorus aequatorialis Stresemann

*Circus ranivorus aequatorialis* Stresemann, Orn. Monatsb., 1924, p. 48: Kilimanjaro.

1 immature ♂, West Kenya, Kenya Colony, 24 November 1915.
1 ♂, Kilosa, Tanganyika Territory, 12 July 1921.

"I have seen a specimen shot by Mr. Swynnerton's collector which is labeled Morogoro, July 1920." (A.L.)

The immature bird is darker, more rufous below than a comparable specimen of typical *ranivorus*. The latter has whitish margins to the feathers of the throat, breast, and anterior part of the abdomen, whereas the former has rufous margins.

### gymnogenys typicus typicus (Smith)

*Polyboroides typicus* A. Smith, S. Afr. Quart. Journ. 1st ser., 1830, p. 107: Eastern Cape Province.

1 adult ♀, Dar es Salaam, Tanganyika Territory, 2 July 1918.
1 adult ♀, Dar es Salaam, Tanganyika Territory, 20 January 1919.

"Also Kipera, and seen at Kilosa and Tindiga." (A.L.)

The black bars on the underparts are slightly wider in these birds than in others from South Africa and from Nyasaland, but the difference is not great. The wings measure 450 and 446 mm., respectively. The dark, wide barring and small size would tend to place these specimens as belonging to Swann's race *graueri*, but I doubt the validity of that race as both characters are subject to considerable variation.

Of the bird collected at Kipera (which I have not seen) Loveridge[1] writes as follows. "The primaries and two of the secondaries in each wing were brown, and there were quite a number of light brown feathers among the inner wing-coverts. The bare skin around the eye was light yellow, the base of the bill between lores pink, the bill itself black. Eyes black. Legs yellow."

[1] Proc. Zool. Soc. Lond., 1923, p. 916.

## Family FALCONIDAE. Falcons, Caracaras

### Falco peregrinus minor Schlegel

*Falco communis minor* Schlegel, Abhandl. Geb. Zool. Vergl. Anat. pt. iii, p. 20, circa 1844: Mountains of the Cape of Good Hope.

1 ♂, Morogoro, Tanganyika Territory, 16 January 1918.

"The bird had a kingfisher in its claws when shot." (A.L.)

The specimen is not quite fully adult, having tawny edges to the feathers of the upperparts, and little white on the cheeks.

### Falco biarmicus biarmicus Temminck

*Falco biarmicus* Temminck, Pl. Col. livr. 55, pl. cccxxiv, 1825: Caffraria and Cape of Good Hope.

1 ♀, Morogoro, Tanganyika Territory, 11 December 1917.

"Also Kilosa and Tabora.
"This bird had a chicken in its claws when collected." (A.L.)

The specimen has the underparts unusually rufous, possibly due in part to staining.

Another Morogoro bird collected by Loveridge is listed by van Someren[1] as *abyssinicus*.

### Falco subbuteo subbuteo Linnaeus

*Falco subbuteo* Linnaeus, Syst. Nat. 10th ed., 1758, p. 89: Europe; restricted type locality, Sweden *apud* Hartert.

1 ♀, Simba, Tabora, Tanganyika Territory, 14 November 1921.
1 ♂, Isikisia, near Tabora, Tanganyika Territory, 16 November 1921.
1 ♀, Mahaka, Dodoma, Tanganyika Territory, 21 March 1922.
1 ♂, Kome Island, Mwanza, Tanganyika Territory, 24 November 1922.

The male from Kome Island and the female from Mahaka have very little rufous on the thighs, lower flanks, and under tail coverts; the latter bird has these parts almost white. The birds from near Tabora are much redder on these areas.

[1] Nov. Zool., **29**, 1922, p. 43.

### Falco cuvieri A. Smith

*Falco cuvieri* A. Smith, S. Afr. Quart. Journ. 1st ser., 1830, p. 392: Kei River, Cape Province.

1 ♂, Morogoro, Tanganyika Territory, 31 October 1917.
1 ♀, Kipera, Kilosa, Tanganyika Territory, 27 September 1922.

"The female had grasshoppers in its stomach." (A.L.)

The male is darker below than the female. The sexual dimorphism in this species is very small.

### Falco chiquera ruficollis Swainson

*Falco ruficollis* Swainson, Birds W. Afr., **1**, 1837, p. 107: Senegal.

1 ♀, Morogoro, Tanganyika Territory, 29 January 1918.
1 ♀ (?), Isikisia, near Tabora, Tanganyika Territory, 16 November 1921.

The bird from Morogoro is not fully adult and has the underparts much washed with cinnamon buff. The other specimen is labeled as a male, but doubtfully. On the basis of size and on comparison with carefully sexed specimens, it seems without much question to be a female.

### Falco tinnunculus tinnunculus Linnaeus

*Falco tinnunculus* Linnaeus, Syst. Nat. 10th ed., 1758, p. 90: Europe; restricted type locality, Sweden *apud* Hartert.

1 ♂, Morogoro, Tanganyika Territory, 4 November 1917.
1 ♀, Morogoro, Tanganyika Territory, 5 February 1918.
1 ♂, Morogoro, Tanganyika Territory, 19 March 1918.
1 ♀, Dodoma, Tanganyika Territory, 6 December 1918.
1 ♀, Dodoma, Tanganyika Territory, 29 November 1921.

"Also Mbala, Kilosa, Tabora. Very common at Dodoma during the 'winter' months where they find the scattered euphorbias offer them a good vantage point from which to descend upon their prey." (A.L.)

The female taken at Dodoma on 29 November 1921 has the tail and rump considerably grayer than any of the others.

These specimens constitute the southernmost records for this bird.

### Falco tinnunculus carlo (Hartert and Neumann)

*Cerchneis tinnunculus carlo* Hartert and Neumann, Journ. f. Ornith., 1907, p. 592: Bissidimo, near Harrar.

1 ♂, Morogoro, Tanganyika Territory, 29 January 1918.

This specimen probably belongs to this race, but is somewhat intermediate between *carlo* and *rupicolaeformis*, but nearer the former. It has the under wing coverts lighter than the former, but not as light as the latter race.

This specimen is the southernmost record for *carlo* as far as I know, with the exception of one collected by Loveridge at Mkarazi, Uluguru Mountains. Recently Bangs and Loveridge[1] have recorded five birds from Ujiji, Lake Tanganyika, a most unexpected locality.

In their revision of the African races of this Kestrel, Grant and Mackworth-Praed[2] consider the present specimen as *rupicolaeformis* and not *carlo*. This seems to be a matter of opinion rather than of fact as it is really an intermediate example.

### Falco naumanni naumanni Fleischer

*Falco naumanni* Fleischer, in Laurop and Fischer's 'Sylvan' for 1817–18, p. 174, 1818: S. Germany.

1 immature ♂, Morogoro, Tanganyika Territory, 12 March 1917.
1 adult ♂, 1 ♀, Isikisia, Tanganyika Territory, 16 November 1921.

"Also Sagayo." (A.L.)

The two birds from Isikisia were apparently a mated pair as they were together; in fact, both were killed with one shot. The species is not known to breed in Africa south of the Sahara, however.

### Falco ardosiacus Bonnaterre and Vieillot

*Falco ardosiacus* Bonnaterre and Vieillot, Encycl. Meth. Orn. pt. 3, 1823, p. 1238: Senegal.

1 ♂, 1 ♀, Kome Island, Mwanza, Tanganyika Territory, 22 November 1922.

These specimens are the first to be recorded from Tanganyika Territory and the southernmost known for the species. They extend

[1] Bull. Mus. Comp. Zool., **75**, 1933, p. 149.
[2] Bull. Brit. Orn. Cl., **54**, 1934, p. 79.

the known range southward by several hundred miles. Since they were collected Bangs and Loveridge[1] have recorded a specimen from Ukerewe Island, also in Lake Victoria, June 17, 1930.

See also remarks by Sclater and Moreau[2] regarding birds seen at Amani, Usambara Mountains recorded under the name of *Falco concolor* Temminck.

### Falco dickinsoni Sclater

*Falco dickinsoni* P. L. Sclater, Proc. Zool. Soc. Lond., 1864, p. 248: Chibasa, Shire River, Nyasaland.

1 ♂ ?, Morogoro, Tanganyika Territory, 18 June 1917.
1 ♂, 1 ♀, Kilosa, Tanganyika Territory, 6 June 1921.

The bird from Morogoro is in brownish, immature plumage.

Dickinson's kestrel was not known previously from north of Mozambique and Nyasaland. The present specimens constitute a notable extension of range and are the first from Tanganyika Territory.

### Polihierax semitorquatus major Bowen

*Polihierax semitorquatus major* Bowen, Proc. Acad. Nat. Sci. Phila., **83**, 1931, p. 259: Mbuyuni, Taita district, Kenya Colony.

1 ♀, Mwadira, Mwanza, Tanganyika Territory, 19 October 1922.

This race of the pigmy falcon occurs in northern Tanganyika Territory and southern Kenya Colony. It is larger and somewhat darker above than the typical South African form. It is not known how far south its range extends as relatively few specimens have been taken in Tanganyika Territory.

The present specimen was considered typical *semitorquatus* by Friedmann[3] but since then Bowen has considered the Tanganyika birds to be a distinct subspecies. The validity of *major* is very questionable however, although van Someren[4] has recently upheld it.

[1] Bull. Mus. Comp. Zool., **75**, 1933, p. 150.
[2] Ibis, 1932, p. 498.
[3] Bull. 153, U. S. N. M., 1930, p. 101.
[4] Nov. Zool., **37**, 1932, p. 271.

# Order GALLIFORMES

## Family PHASIANIDAE. Pheasants, Peacocks

### Francolinus coqui hubbardi Ogilvie-Grant

*Francolinus hubbardi* Ogilvie-Grant, Bull. Brit. Orn. Cl., **4**, 1895, p. xxvii: Nassa, s. e. shore of Victoria Nyanza.

1 ♂, 1 ♀, Sanga, Mwanza, Tanganyika Territory, 16 October 1922.

"Purchased from a native who had snared them for food." (A.L.)

This constitutes the southernmost record for this bird, the nearest locality, Nassa, on Speke Gulf, being a short distance to the northeast of Sanga.

### Francolinus sephaena grantii Hartlaub

*Francolinus grantii* Hartlaub, Proc. Zool. Soc. Lond., for 1865, p. 665, pl. xxxix, fig. 1, 1866: Unyamwezi country, Tanganyika Territory.

1 ♂, Dodoma, Tanganyika Territory, 5 December 1918.
1 ♀, Saranda, Tanganyika Territory, 6 October 1921.

"It is a common species throughout the Dodoma-Singida thorn-bush steppe." (A.L.)

Besides the two specimens listed above, Loveridge shot two males and one female at Saranda, and a female at Mahaka. Van Someren[1] lists three specimens from Dodoma. Although he does not say so, these were also collected by Loveridge. Of these three, van Someren writes that they are not identical and can be matched by birds from Kisumu.

The Dodoma male is different from all others examined (16 specimens) in being practically white, untinged with buffy, on the abdomen. It is certainly the lightest bird seen. The lower back is grayer than the average, and the upper back has more dark margins to the white feathers than do most examples in the series.

The female is not fully adult, is lighter, more reddish above, and paler, less marked below, than other birds.

While working with the Smithsonian-Chrysler Expedition in 1926, Loveridge collected three more specimens of this bird, as follows:

♂, Dodoma, Tanganyika Territory, 25 June 1926.
♀, Dodoma, Tanganyika Territory, 2 July 1926
♂, Saranda, Tanganyika Territory, 15 July 1926.

[1] Nov. Zool., **29**, 1922, p. 30.

This Dodoma male is quite unlike the one described above. It is buffier, less whitish below, less marked with reddish on the base of the throat and sides of the neck, and slightly lighter above, and lacks the subterminal dark marks on the upper tail coverts. The Saranda bird is similar but slightly darker.

### Francolinus africanus uluensis Ogilvie-Grant

*Francolinus uluensis* Ogilvie-Grant, Ibis, 1892, p. 44: Machakos, Kenya Colony.

♂, Nairobi District, Kenya Colony, 21 August 1920.

The specimen is young although in adult plumage. The tarsal spurs are merely little yellowish knobs. This individual is lighter, and generally brighter in color than two males from Guaso Nyiro and Fort Hall, and also differs from them in that it has no black spots on the white throat patch.

Loveridge collected another male and a female also at Nairobi. The female is now in the Museum of the Academy of Natural Sciences at Philadelphia and the male in the American Museum of Natural History.

### Francolinus shelleyi trothae Reichenow

*Francolinus shelleyi* var. *trothae* Reichenow, Vög. Afr. **1**, 1901, p. 490: Ugalla, Tanganyika Territory.

2 ♂, Sagayo, Mwanza, Tanganyika Territory, 9 November 1922.

Reichenow described *trothae* from a single specimen (♂) in 1901. Since that time no further specimens have been collected with the exception of the present two, which are therefore of unusual interest. The type came from Ugalla (which is somewhere on the river of that name) while Sagayo, whence come these birds collected by Loveridge, is roughly 200 miles farther north. So then these two specimens not only constitute a virtual "rediscovery" of the form, but also a considerable extension of its known range.

Unfortunately, I have no comparative material of *shelleyi* with which to compare them, but they differ from the colored figure of typical *shelleyi*[1] in all the characters given by Reichenow for *trothae* but one, namely, that the rufous flecks on the breast and sides are not darker than those in the plate.

[1] Cat. Birds Brit. Mus., **22**, 1893, pl. vi.

However, Mackworth-Praed[1] records *shelleyi* from Southwestern Uganda, which means that the present specimens come from territory just about midway between Ugalla (type locality of *trothae*) and the range of typical *shelleyi*. It is consequently not very surprising to find some degree of intergradation in these birds. On the whole, however, they seem best referred to *trothae*.

One of the birds is younger than the other, has the spurs still blunt and small, less rufous on the breast, and the lores and a stripe from thence through the eye, whitish without black markings.

Both birds are equal in size, and have wings 168 mm. long.

Jackson[2] lists 3 females from Mulema, Southeast Uganda (Doggett coll.) which appear, " . . . to be much closer to *F. s. trothae*, which is found in Tanganyika Territory."

Chapin[3] has recently cast considerable doubt on the validity of *trothae*. Its final status must be left for someone with adequate material to decide.

### Francolinus levaillanti kikuyuensis Grant

*Francolinus kikuyuensis* Ogilvie-Grant, Bull. Brit. Orn. Cl., **6**, 1897, p. xxiii: "Kikuyu distr.", in error, Eldoret *apud* Mackworth-Praed.

1 ♂, Eldoret, Kenya Colony, 8 November 1920.

This topotypical specimen is slightly smaller than the average, having a wing length of 165 mm. Van Someren[4] gives the wing length as 165–179 mm.

### Francolinus hildebrandti fischeri Reichenow

*Francolinus fischeri* Reichenow, Journ. f. Ornith., 1887, p. 51: Ussere, Wembere Steppes, Tanganyika Territory.

1 ♀, Myombo, Tanganyika Territory, 4 December 1920.
1 ♂, Kilosa, Tanganyika Territory, 5 January 1921.
1 ♀, Kilosa, Tanganyika Territory, 8 August 1922.
1 ♂, Dodoma, Tanganyika Territory, 3 July 1926.

The last of the four specimens listed was taken by Loveridge while

[1] Ibis, 1922, p. 119.
[2] Game Birds of Kenya and Uganda, 1926, pp. 28–29.
[3] Bull. Amer. Mus. N. H., **65**, 1932, p. 700.
[4] Journ. E. Afr. and Uganda Nat. Hist. Soc., 1926, p. 47.

with the Smithsonian-Chrysler Expedition and is now in the United States National Museum.

The male from Kilosa is a young bird and is much browner than the one from Dodoma. The latter is considerably larger as well.

The distribution of *Francolinus hildebrandti* in northcentral Tanganyika Territory is as follows: the typical form *hildebrandti* occurs high in the mountains (Nyange, Uluguru Mountains, 1 specimen), while the bird of the steppes and plains is *fischeri* and that of the coastal district from the Rufigi River southward *grotei*. As far as I know, *altumi* has not been taken in Tanganyika Territory. Recently Lynes[1] has recorded *johnstoni* from Iringa, where it was breeding.

Of the first three birds listed Loveridge writes as follows, "These were the only three specimens obtained by my collectors although the birds were very abundant and often heard calling close to the house. The species feeds in thick undergrowth and is difficult to approach on account of its wariness. At night they roosted in the trees of a rubber plantation. The immature male has a spotted brown breast, the adults, which I have compared with *hildebrandti* typica in the British Museum collection, are not nearly so strikingly marked as in the typical form."

An immature bird (sexed as ♀, but probably a ♂) collected at Pooma, Singida, Tanganyika Territory, 5 October 1922, may belong to this race, but it is so young and the feathering so unlike anything else I have seen that I cannot be certain.

On June 4, 1921, at Kilosa, a newly hatched chick, possibly two days old, was found wandering in the road. The specimen was not saved, but the observation gives an idea of the breeding season in that region.

### Francolinus squamatus maranensis Mearns

*Francolinus schuetti maranensis* Mearns, Smiths. Misc. Coll. **56**, no. 14, 1910, p. 1: Maranu, Kilimanjaro, 5,000 feet.

1 adult ♀, Nairobi, Kenya Colony, 13 October 1915.
1 adult ♂, 1 immature ♀, Ngong Forest, Nairobi, Kenya Colony, 26 July 1919.

"Also Tumutumu, Kenya Colony, 3 ♂, 1 ♀, October 1920." (A.L.)

The adult female is darker and smaller than the male, but has the throat whiter. The immature bird is about two-thirds full size and is darker above than either of the adults, the feathers of the back being

[1] Journ. f. Orn., **82**, 1934, Sonderheft, p. 47.

very broadly subterminally tipped with blackish. The feathers of the breast and sides have white shafts and white terminal shaft spots; the bill is dark brownish, quite in contrast to the orange-red bill of the adults.

The male is remarkable in that it has two well developed spurs on each foot.

Conover[1] has recently separated the birds of the Usambara Mountains under the name *usambarae*. This race is characterized by the presence of a full black line extending from behind the ear coverts forward to the back of the eye, and a streak of thickly spread dull black spots beginning at the gape and extending below the eye to behind the auriculars. The specimen recorded by me as *marancnsis*[2] belongs to Conover's race.

### Francolinus squamatus zappeyi Mearns

*Francolinus schuetti zappeyi* Mearns, Smiths. Misc. Coll., **56**, no. 20, 1911, p. 4: E. shore of Lake Victoria.

1 adult ♂, 2 adult ♀, Chantwara, Bukoba, Tanganyika Territory, 23–27 December 1922.

These three specimens are interesting in that they are very light for *zappeyi* and approach the characters given for *dowashanus*. Van Someren[3] has recorded *schuetti* from not far to the north of Chantwara (South Ankole, Uganda), but whether *schuetti* and *zappeyi* are distinct seems questionable. However, I judge the former race solely by description as I have seen no material.

One female has the grayish-brown median stripes on the abdominal feathers very narrow, and agrees with the characters of *dowashanus*, while the other has these stripes much broader and darker, and agrees with *zappeyi*, to which race I refer all three specimens, as *dowashanus* has not been recorded west of Lake Victoria.

These specimens constitute the first record for this bird in northwestern (west of Lake Victoria) Tanganyika Territory, but the race is known from Uganda and the eastern Belgian Congo.

Since the above was written Mackworth-Praed and Grant[4] has reviewed the forms of this francolin and have decided that *zappeyi*,

[1] Auk, 1928, p. 356.
[2] Ibis, 1928, p. 75.
[3] Nov. Zool., **29**, 1922, p. 27.
[4] Ibis, 1936, pp. 374-376.

*dowashanus, tetraoninus,* and *schuetti* are all the same, in which case the last name would be the proper one for these birds.

### Pternistes afer humboldtii (Peters)

*Francolinus humboldtii* Peters, Monatsb. Akad. Berlin, 1854, p. 134: Tete, Mozambique.

1 ♂, 1 ♀, Lumbo, Mozambique, 31 July 1918.

"Common in the natives' cultivated plots." (A.L.)

The female has more white on the black abdominal feathers than the male. Sclater[1] gives the range of this bird as north to southern Tanganyika Territory. Grote[2] listed a bird from the south part of the coast of Tanganyika Territory but refrained from identifying it as to subspecies. He, however, compared it with Nyasaland specimens, which are *leucoparacus,* and naturally found differences. His coastal bird is probably *humboldtii.* Sclater[3] has reviewed the races of this spur-fowl and his conclusions seem correct as far as my material indicates. Bowen[4] has examined the present specimens and agrees in the identification. He also records *humboldtii* from Mkata Plains and the Mahenge district of Tanganyika Territory.

### Pternistes afer itigi Bowen

*Pternistes cranchii itigi* Bowen, Proc. Acad. Nat. Sci. Phila., 1930, p. 86: Gwao's, near Itigi, Tanganyika Territory.

1 ♀, Saranda, Tanganyika Territory, 8 October 1921.
1 ♂, 1 ♀, Gwao's, near Itigi, Tanganyika Territory, 11 October 1921.

"Also Pooma (1 ♀, 14 October 1921). A very common species in the Singida thorn-bush steppe. They are to be seen feeding on the roads in the mornings, but seek refuge in the dense thorn thickets which are often quite impenetrable to man, especially between Itigi and Suna.
"The series shows considerable variation in coloring." (A.L.)

Bowen has reviewed the forms of this spur-fowl in detail[5] and I follow him in my disposition of the present material.

[1] Syst. Avium Ethiop., pt. 1, 1924, p. 90.
[2] Journ. f. Ornith., 1919, p. 298.
[3] Bull. Brit. Orn. Cl., **41**, 1921, p. 134.
[4] Proc. Acad. Nat. Sci. Phila., **82**, 1930, pp. 149–164.
[5] Proc. Acad. Nat. Sci. Phila., **82**, 1930, pp. 149–164.

This form inhabits the high central plateau of Tanganyika Territory west to the Ukongo region north of Lake Rukwa where it intergrades with *intercedens*. At Tabora it merges with *böhmi*.

The birds from Gwao's (type locality) have the shaft stripes of the feathers of the underparts much wider than do specimens of *böhmi* from Tabora, and in the former the margins of these feathers are considerably whiter, less vermiculated than in the latter. The Gwao's male, has all the feathers of the lower breast and middle abdomen with extremely broad black median stripes bordered with wide white ones, and each feather laterally margined with very wide, deep bay-brown stripes, giving the underparts a rich tricolored appearance. It cannot be a young bird as it has the tarsal spurs well developed. The other Gwao's bird is labeled ♀, but has small blunt, developing spurs, and is undoubtedly a male. This specimen is subadult, but does not agree with the characters given by van Someren.[1]

Reichenow[2] writes that a very old bird from Iringa has the forehead, forepart of the superciliaries, and cheeks deep black. This is true of the two birds from Gwao's as well, but not of those from Saranda and from Pooma. It seems to be an indication of age and not a geographical variation.

Meise[3] has recently described two new forms, *tornowi* from Mkiri, Lake Nyasa, and *tertius* from Kitiniko, Ruhuhu, Tanganyika Territory. I have seen no specimens of either, but the descriptions sound convincing.

### Pternistes afer böhmi Reichenow

*Pternistes böhmi* Reichenow, Journ. f. Ornith., 1885, p. 465: Igonda, Tanganyika Territory.

1 ♂, 1 ♀, Tabora, Tanganyika Territory, 9 December 1918.

This is the race inhabiting the fairly low country from Kigoma to Tabora and Igonda, intergrading with *itigi* east of Tabora.

The male has the shaft streaks and vermiculations of the breast and lower throat black, while in the female they are dusky brown. The feathers of the mantle (interscapulars) are likewise vermiculated in the male and have no mottling in the female. The latter has much darker and broader shaft streaks in the feathers of the back and upper wing coverts than does the male.

[1] Journ. E. Afr. and Uganda Nat. Hist. Soc., 1926, pp. 97–99.
[2] Vög. Afrikas, **1**, 1901, p. 682.
[3] Orn. Monatsh, **41**, 1933, pp. 142–144.

### Pternistes afer nyanzae Conover

*Pternistes cranchi nyanzae* Conover, Auk, **46**, 1929, p. 345: Fort Ternan, Kenya Colony.

1 adult ♂, 2 adult ♀, Locaret, Ankole, Uganda, 3 September 1919.
1 juvenal ♀, Singo, Ruanda, Uganda, 25 September 1919.
1 juvenal ♀, Kibosi, Ruanda, Uganda, 4 October 1919.
1 adult ♂, Ekagango, Ankole, Uganda, 17 October 1919.
1 adult ♂, 1 subadult ♀, Mwanza, Tanganyika Territory, 1 December 1922.

The subadult female collected at Mwanza is molting into adult plumage, and is in poor condition for study. However, on geographic grounds there can be no question of its subspecific identity. This race occurs from Fort Ternan and the Kisumu district, Kenya Colony, across Uganda to the Congo border, south to Ruanda, and east of Urundi, to as far as the southern end of Lake Victoria. Conover[1] records one male from Nyanza, northeastern shore of Lake Tanganyika as belonging to this race, but not typical. This is by far the southernmost record.

Dr. von Someren has recently[2] described the juvenal plumage of *P. c. intercedens*, although his birds are what would now be called *nyanzae*. The two juvenal birds from Ruanda (Singo and Kibosi) do not agree with the description given by van Someren. The Singo bird is only partly grown and is wholly in juvenal dress while the Kibosi specimen is in postjuvenal molt. The former may then be used for the description of the first pennaceous plumage. It is dull dark brown on the head and nape, the feathers of the latter with whitish gray tips; the upper back, scapulars, and inner upper wing coverts sandy tawny brown, each feather with a very broad fuscous-brown center; the feathers of the lower back less grayish, finely marked with wavy blackish-brown lines; lores, orbital region, chin, and upper throat light grayish with a buffy wash, brownish basally; the forehead similar but each feather with a black median streak; breast, abdomen, flanks, and sides broadly barred dark brown and grayish white, the dark bands becoming paler towards the middle of the abdomen; the thighs light creamy gray banded with pale sandy brown; remiges dull brown, the outer webs lighter, more tawny, and mottled with dark brown; rectrices like the lower back; bill (dried) brown; feet (dried) orange-yellowish brown.

[1] *loc. cit.*
[2] Journ. E. Afr. and Uganda Nat. Hist. Soc., 1926, p. 97.

The Kibosi bird has assumed the subadult plumage on the upper breast, sides, nape, and upper back, and has the upper throat, chin, lores, and orbital space bare as in adults.

The subadult plumage resembles the adult stage except in that the general tone of the coloration is paler, the feathers of the breast and upper abdomen with fewer vermiculations, more noticeably whitish.

The adult male from Mwanza has broad chestnut margins on some of the feathers of the upper breast as well as on the abdomen.

### Pternistes rufopictus Reichenow

*Pternistes rufopictus* Reichenow, Journ. f. Ornith., 1887, p. 52: Wembere Steppes, Tanganyika Territory.

1 ♂, 1 ♀, Sagayo, Mwanza, Tanganyika Territory, 31 October 1922.

The female is much smaller than the male, having a wing length of 202 mm., as against 222 mm., in the latter. Even so, the female is unusually large, as Reichenow[1] gives the wing length of females as 180–190 mm.

Besides the pair listed, Loveridge collected one male and five more females at Sagayo, during October 1922. Two of these are in the American Museum of Natural History; the rest in the Academy of Natural Sciences at Philadelphia.

### Pternistes leucoscepus infuscatus Cabanis

*Pternistes infuscatus* Cabanis, Journ. f. Ornith., 1868, p. 413: Lake Jipe, near Kilimanjaro.

"Several collected at Tumutumu, Kenya Colony, now in Nairobi Museum." (A.L.)

This bird is common throughout Tanganyika Territory from the Pangani River north into Kenya Colony through which it ranges to the Elgon and Baringo districts.

[1] Vög. Afr., **1**, 1901, p. 65.

### Coturnix coturnix africana (Temminck and Schlegel)

*Coturnix vulgaris africana* Temminck and Schlegel, Faun. Jap. 1849, p. 103: South Africa.

"One shot at West Kenya in November 1915. Now in Nairobi Museum." (A.L.)

This is the West Kenya record listed by van Someren.[1]

### Coturnix delegorguei Delegorgue

*Coturnix delegorguei* Delegorgue, Voy. Afr. Austr., **2**, 1847, p. 615: Oury, that is, Upper Limpopo River.

1 ♀ ?, Nairobi, Kenya Colony, 2 July 1915.
1 ♀, Morogoro, Tanganyika Territory, 18 June 1917.
1 ♂, Nairobi, Kenya Colony, 24 August 1920.
1 ♂, Samumba, Singida, Tanganyika Territory, 25 February 1922.

"The Morogoro bird is probably a female although labeled a male." (A.L.)

The male from Samumba is larger than the one from Nairobi and has the black ventral patch more extensive than the latter. The former is browner, the latter, grayer above.

## Family NUMIDIDAE. Guinea-fowl

### Numida meleagris mitrata Pallas

*Numida mitrata* Pallas, Spic. Zool., **1**, fasc. iv, pl. iii, 1767: Madagascar.

1 ♂, Morogoro, Tanganyika Territory, 18 October 1917.
1 immature ♂, Chanzuru, Tanganyika Territory, 28 April 1921.
1 ♀, Mkata River, Tanganyika Territory, 23 August 1921.
1 ♀ ?, Sungwiri, Kilosa, Tanganyika Territory, 14 November 1922.

"Also Kilosa and Kongwa, Tanganyika Territory, and Lumbo, Mozambique. A few miles north of Mkata Station these birds are to be met with in almost incredible numbers." (A.L.)

The races *mitrata*, *uhehensis*, and *reichenowi* meet around Kilosa,

[1] Nov. Zool., **29**, 1922, p. 32.

but the specimen from that locality is best referred to the typical form. I have seen no material of *rikwae* (of which *frommi* is probably a synonym) and cannot tell from the description whether it is valid or not. Sclater[1] considers it doubtfully distinct from *intermedia*, and likewise treats of *uhehensis*, which, however, seems more worthy of recognition. Van Someren[2] lists a specimen from Makindo (collected by Loveridge) as *mitrata uhehensis* (?). In reporting on Loveridge's Uluguru-Usambara trip in 1926[3] I recorded three specimens of *uhehensis* from Mkarazi, Uluguru Mountains. On examining a large series of guinea fowls, I find I cannot be certain of these specimens and am forced to the decision that they are nearer to typical *mitrata* than anything else. Probably van Someren's record from Makindo (south of Handeni) refers to *mitrata* also.

### Numida meleagris reichenowi Grant

*Numida mitrata reichenowi* Ogilvie-Grant, Ibis, 1894, p. 536: Makarungu, Ukambani district.

1 ♂, Suna, near Saranda, Tanganyika Territory, 8 October 1921.
1 ♀, Mdjengo's, Singida, Tanganyika Territory, 18 October 1921.

"Also Mbonoa, Mtali's, and Zengeragusu. Very common in Singida district. Salimu killed five with one shot at Mbonoa." (A.L.)

The distribution of this race in Tanganyika Territory is not yet entirely understood. The bird is known, however, from the Kilimanjaro district (Moshi and Kahe) southwestward through Arusha to Mtali's, Zengeragusu, then along the eastern edge of the Wembere Steppes to Mdjengo's, Singida, and south to Mbonoa, Itigi and Saranda. Typical *reichenowi* probably does not extend much to the east of Dodoma as the Kilosa region is inhabited by *mitrata*. To the southwest of the central railway line the race *uhehensis* replaces *reichenowi*, but the exact limits of the ranges are not known. The present two specimens are somewhat intermediate between these two races, but nearer to the latter.

The bony helmet is shorter than in individuals from Kenya Colony.

[1] Syst. Avium Ethiop., pt. 1, 1924, p. 97.
[2] Nov. Zool., **29**, 1922, p. 25.
[3] Ibis, 1928, p. 76.

### Guttera pucherani Hartlaub

*Guttera pucherani* Hartlaub, Journ. f. Ornith., 1860, p. 341: Zanzibar.

1 unsexed, Frere Town, Kenya Colony, 1 August 1919.

This specimen, which I have not seen, was given by Loveridge to the Tring Museum some years ago.

### Guttera edouardi granti (Elliot)

*Numida granti* Elliot, Proc. Zool. Soc. London, 1871, p. 584: Ugogo, Tanganyika Territory.

1 ♂, 1 ♀, Mahaka, Tanganyika Territory, 28 March 1922.

"Three birds probably belonging to this race were seen at Kidete in 1923." (A.L.)

The two skins listed above have not been examined by me as they were given to Tring Museum.

While with the Smithsonian-Chrysler Expedition in 1926, Loveridge collected two females at Saranda, Dodoma, on 15 July. These birds are now in the United States National Museum.

According to Sclater[1] *granti* is only doubtfully distinct. However, the limited material at hand (2 specimens) agrees with the description of the race.

## Family GRUIDAE. Cranes

### Balearica pavonina gibbericeps Reichenow

*Balearica gibbericeps* Reichenow, Journ. f. Ornith., 1892, p. 126: Lake Jipe, near Kilimanjaro.

1 ♂, Tindiga, Tanganyika Territory, 21 September 1921.
1 ♂, Lalago, Tanganyika Territory, 17 October 1922.

"Also one at Singida, Tanganyika Territory; they are very numerous at Kilimatinde and throughout the Mwanza district." (A.L.)

The Tindiga specimen has the secondaries longer than the primaries while that from Lalago has the primaries slightly longer than the secondaries. The latter has the bare area on the sides of the head very much broader antero-posteriorly than the former and also has a more forward projecting forehead.

[1] Syst. Avium Ethiop., pt. 1, 1924, p. 99.

## Family RALLIDAE. Rails, Coots, Gallinules

### Rallus caerulescens Gmelin

*Rallus caerulescens* Gmelin, Syst. Nat., **1**, pt. 2, 1789, p. 716: Cape of Good Hope

1 ♂, Nairobi, Kenya Colony, 5 November 1915.
1 ♀, Morogoro, Tanganyika Territory, 30 November 1918.

Sclater[1] gives the range of this rail as extending north to Kenya Colony in the eastern part of Africa. However, Erlanger[2] records a specimen taken by Hilgert near Adis Ababa, Ethiopia, a considerable northern extension of the range.

The two specimens listed above agree with topotypical material from the Cape of Good Hope.

### Crex crex (Linnaeus)

*Rallus crex* Linnaeus, Syst. Nat. 10th ed., 1758, p. 153: Europe; restricted type locality, Sweden (Hartert).

1 ♂, Nairobi, Kenya Colony, 15 April 1919.

"With the exception of a corn crake brought into the house at Nairobi by a cat in April 1916, I have met with no other examples of this bird." (A.L.)

The specimen is an adult in fine plumage.

### Limnocorax flavirostra (Swainson)

*Gallinula flavirostra* Swainson, Bds. West Afr., **2**, 1837, p. 244, pl. xxviii: Senegal.

1 ♂, 1 ♀, Dar es Salaam, Tanganyika Territory, 16 November 1918.
1 ♂, Kabare, Bukoba, Uganda, 21 August 1919.
1 immature ♀, Kilosa, Tanganyika Territory, 8 July 1921.

"Also Nairobi, Kenya Colony. This is one of the commonest of water birds in the Territory." (A.L.)

West African males are blacker, less brownish above than East African examples of like sex. The latter retain a slight brownish cast to the back even in full breeding plumage. Females are not separable. Young birds have whitish throats. The immature female from Kilosa

[1] Syst. Avium Ethiop., pt. 1, 1924, p. 101.
[2] Journ. f. Ornith., 1905, p. 87.

has a light patch on the maxilla surrounding the nares, which in life was probably yellowish. Unfortunately no note was made of the color in life.

### Porzana porzana (Linnaeus)

*Rallus porzana* Linnaeus, Syst. Nat. 12th ed., **1**, 1766, p. 262: Europe; restricted type locality, France (Hartert).

1 ♂, 1 ♀, Kilosa, Tanganyika Territory, 14 April 1921.

The male has the entire throat and chin abundantly flecked with whitish, while the female has these parts dark slate gray with only a few lateral spots. The species is extremely variable in the amount of freckling it shows.[1]

### Porzana pusilla obscura Neumann

*Porzana obscura* Neumann, Orn. Monatsb., 1897, p. 191: Kibaya, Tanganyika Territory.

1 adult ♂, 1 adult ♀, 1 immature ♀, Kilosa, Tanganyika Territory, 22 April 1921.
1 immature ♀, Kilosa, Tanganyika Territory, 22 June 1921.

"This is a common species at Kilosa and Tindiga." (A.L.)

The adult female is lighter than the male, particularly on the throat, and is, in fact, more like *intermedia* than like *obscura*. The throat is lighter than the rest of the underparts. The male is lighter, particularly on the head, than the race *intensa* from South Africa (Moorddrift, Transvaal.). In this connection it is noteworthy that van Someren[2] writes of a female from Lake Naivasha, Kenya Colony, that the, " . . . gray which is appearing on the head and throat is paler than in southern birds. I suspect that the northern birds are distinct." Van Someren's suspicion has been shown to be correct; the northern birds are *obscura* and the southern ones *intensa*. The type locality of *obscura* is Kibaya in the Masai country of northern Tanganyika Territory, and inasmuch as van Someren's birds to the north of that locality and Loveridge's to the south of it agree, there can be no question but that the present birds are *obscura*.

The adult female was in breeding condition when shot; large ova were present in the ovary.

[1] *cf.* van Someren, Nov. Zool., **29**, 1922, p. 21.
[2] Nov. Zool., **29**, 1922, p. 21.

The two immature birds are not similar. One is heavily barred with brown completely across the breast and abdomen, while the other has the bars confined to the sides and flanks.

### Sarothrura elegans languens Friedmann

*Sarothrura elegans languens* Friedmann, Proc. N. Eng. Zool. Cl., **10**, 1928, p. 68: near Bagilo, Uluguru Mountains, Tanganyika Territory.

1 ♀, near Bagilo, Uluguru Mountains, Tanganyika Territory, 19 May 1921.

"This was the only example of the genus collected or seen from 1915 to 1925." (A.L.)

This specimen is the type and only known example of *languens*, and constitutes the first record for the species in Tanganyika Territory, serving to connect the ranges of *elegans* of South Africa and of *loringi* of Mt. Kenya.

*S. e. languens* is similar to *loringi*, but lighter above, somewhat more narrowly barred below, and slightly smaller in size. The Somaliland form, *buryi*, is easily told from *languens* by the fact that the center of the breast and abdomen is conspicuously white in the former and not so in the latter.

### Porphyrio madagascariensis (Latham)

*Gallinula madagascariensis* Latham, Index Orn. Suppl., 1801, p. lxviii: Madagascar.

1 ♂, 1 ♀, Tindiga, near Kilosa, Tanganyika Territory, 21 September 1921.

"Also at Singida where it appeared to be common." (A.L.)

Both specimens are adults in fine plumage.

### Porphyrula alleni (Thomson)

*Porphyrio alleni* Thomson, Ann. Mag. Nat. Hist. **10**, 1842, p. 204: Idda, Niger River.

1 ♂, 1 ♀, 1 immature ♀, Kilosa, Tanganyika Territory, 19 April 1921.

"Not an uncommon species during the heavy rains, March, April, and May." (A.L.)

The adult female has a shorter bill and shorter wings, but longer tarsi than the male.

The immature bird is practically adult in appearance except for some white spots on the throat and a few brownish flecks on the sides of the neck. The bill and feet are smaller and darker (in dried skin) than are those of the adults.

### Gallinula chloropus brachyptera (Brehm)

*Stagnicola brachyptera* Brehm, Vogelf. 1855, p. 331: Central Africa.

1 ♂, 1 ♀, Kilosa, Tanganyika Territory, 22 June 1921.

"Common throughout the Kilosa district." (A.L.)

These two specimens have the white flank stripes somewhat narrower than in a series of six from Kenya Colony and Uganda. The female has a slight amount of white on the lower, middle abdomen; the male has none. The under tail coverts in both are pure white, not tinged with buffy.

### Gallinula angulata Sundevall

*Gallinula angulata* Sundevall, Oefv. Vet.-Akad. Förh. Stockholm for 1850, p. 110: Lower Caffraria, that is, Natal.

1 ♂, 1 ♀, 1 immature ♀, Kilosa, Tanganyika Territory, 22 June 1921.

"Common at Kilosa, but warier than *G. chloropus brachyptera*." (A.L.)

Besides the above three specimens, Loveridge collected an immature ♂ at Dodoma, Tanganyika Territory, 23 June 1926, while with the Smithsonian-Chrysler Expedition. This specimen is now in the United States National Museum.

The adult male is darker, has a longer bill, but shorter wings, than the adult female. The immature female is older and larger than the immature male. The former has more and darker brown on the breast, sides of the neck and the cheeks than the latter.

### Fulica cristata Gmelin

*Fulica cristata* Gmelin, Syst. Nat., **1**, pt. 2, 1789, p. 704: Madagascar.

1 ♂, 1 ♀, Singida, Tanganyika Territory, 22 October 1921.

Besides these two in the Museum of Comparative Zoölogy, Loveridge collected a subadult bird and 6 (in alcohol) in Tanganyika Territory while with the Smithsonian-Chrysler Expedition in 1926. The

latter are all in the United States National Museum. The six alcoholic specimens probably came from Arusha.

The subadult bird has the head and neck finely dotted with white (the white is actually on the frayed ends of the feathers).

## Family OTIDIDAE. Bustards

### Choriotis kori struthiunculus (Neumann)

*Otis kori struthiunculus* Neumann, Journ. f. Ornith., 1907, p. 306: Lake Zwai, Ethiopia.

1 unsexed, Sagayo, Mwanza, Tanganyika Territory, 25 October 1922.

"I have also seen this fine bird at Mlewa's in November 1921." (A.L.)

Sclater[1] gives the range of this bird as extending south to Kenya Colony and Somaliland. However, in his original description of *struthiunculus* Neumann[2] writes that it occurs south to middle German East Africa (Tanganyika Territory) but recorded only from the coastal districts, not known from the interior. Schuster[3] observed it in the inland parts of the territory, at Singida and around Shinyanga (northeastern Unyamwezi).

### Eupodotis canicollis canicollis (Reichenow)

*Otis canicollis* Reichenow, Orn. Centralb., 1881, p. 79: Bardera, Juba River.

1 ♂, Mbonoa, near Itigi, Tanganyika Territory, 7 October 1921.
1 unsexed, Sagayo, Mwanza, Tanganyika Territory, 8 November 1922.

"Frequents cultivated plots after the maize has been cut." (A.L.)

While with the Smithsonian-Chrysler Expedition, Loveridge collected a subadult male at Saranda, Dodoma, Tanganyika Territory, 15 July 1926. This specimen is in the United States National Museum.

The unsexed bird is undoubtedly a male to judge by its plumage characters. The Mbonoa specimen has an unusually long tail (173 mm.).

This race is paler, less rufescent, than *somaliensis*. Reichenow's form, *erlangeri*, is a straight synonym of *canicollis*.

[1] Syst. Avium Ethiop., pt. 1, 1924, p. 112.
[2] *cit. supra.*
[3] Journ. f. Ornith., 1926, p. 149.

### Lissotis melanogaster melanogaster (Rüppell)

*Otis melanogaster* Rüppell, N. Wirbelth. Vög., 1835, p. 16, pl. vii: Lake Tana, Ethiopia.

1 ♀, Kimamba, near Kilosa, Tanganyika Territory, 18 August 1921.
1 ♂, Mwadira, Mwanza, Tanganyika Territory, 19 October 1922.
1 ♀, Sagayo, Mwanza, Tanganyika Territory, 8 November 1922.

"Common throughout the Mwanza district. Like *Eupodotis canicollis canicollis*, it frequents the cultivated plots after the maize has been cut." (A.L.)

*L. lovati* and *L. notophila* are synonyms of this species according to Sclater and Mackworth-Praed.[1] However, Gyldenstolpe[2] writes that South African specimens may be separated on the basis of larger size and that Oberholser's name *notophila* is available for that race. Gyldenstolpe gives the wing length of South African birds as 377–380 mm. (♂), 337–343 mm. (♀), and of northern birds 330–354 mm. (♂), 303–320 mm. (♀). The male collected by Loveridge at Mwadira has a wing length of 373 mm. and is like southern *notophila*, while the two females listed above have wing lengths of 322 and 316 mm., respectively, and are therefore like typical *melanogaster*. It therefore appears that these birds, like the large bustards (*Choriotis*) are very variable without respect to geography, and the proper course to follow is to consider all these specimens as *melanogaster*. It may be, however, that *notophila* is consistently larger and deserves nomenclatural recognition. Roberts,[3] as well as Gyldenstolpe, recognizes it, as does also Bannerman.

It is clear, however, that the difference, if any, is one of size, and not of the amount of black or white in the wing. Although *notophila* was originally described by Oberholser[4] as a black-winged form, the distribution of the color in the remiges is not geographical in its variation but purely individual.

### Lissotis hartlaubii (Heuglin)

*Otis hartlaubii* Heuglin, Journ. f. Ornith., 1863, p. 10: eastern Sennar.

This species is included in the present work on the basis of a female specimen (now in the United States National Museum) collected by

[1] Ibis, 1920, p. 799.
[2] Kungl. Sv. Vet. Akad. Handlingar, 1924, p. 298.
[3] Ann. Trans. Mus., **10**, pt. 3, 1924, p. 135.
[4] Proc. U. S. Nat. Mus., **28**, 1905, p. 836.

Loveridge, while with the Smithsonian-Chrysler Expedition, at Dodoma, Tanganyika Territory, 20 July 1926.

This seems to be the first specimen taken in the inland districts of Tanganyika Territory, all the others being from the coastal area (inland to Arusha, Kilimanjaro region).

The measurements of the bird are as follows: wing 300; tail 141; culmen from base 44; tarsus 116 mm. Reichenow's figures[1] are larger, *viz.*, wing 310–330; tail 160–170; bill 47–55; tarsus 125 mm., but the measurements given by Finsch and Hartlaub[2] for *maculipennis* (= ♀ *hartlaubii*) are very similar to those of Loveridge's specimen.

Sclater[3] does not include Tanganyika Territory in the range of this bird, but Reichenow[4] lists specimens from Arusha and the Pangani River.

Zedlitz[5] considers *maculipennis* a distinct race of *hartlaubii*, but without seeing any material other than the single specimen here listed, I prefer to follow Sclater's list and consider it the same as *hartlaubii*.

## Order CHARADRIIFORMES

### Family JACANIDAE. Jacanas

#### Actophilornis africanus (Gmelin)

*Parra africana* Gmelin, Syst. Nat., **1**, pt. 2, 1789, p. 709: Africa; restricted type locality, Ethiopia (Grant, Ibis, 1915, p. 59).

1 ♂, Dar es Salaam, Tanganyika Territory, 20 January 1919.
1 immature ♂, Kilosa, Tanganyika Territory, 1 July 1921.
1 ♀, Kilosa, Tanganyika Territory, 7 July 1921.
1 ♂, Kipera, Kilosa, Tanganyika Territory, 5 May 1923.

"It occurs on most open water which has suitable cover on its margins. Being an easily recognized species, my collectors were instructed not to shoot them." (A.L.)

This species is common throughout the region represented by this collection. It is non-migratory and even sedentary except in places where the water dries up in the dry seasons.

[1] Vog. Afrikas, **1**, 1901, p. 259.
[2] v. d. Decken, Reise, **4**, Vog., 1870, p. 617.
[3] Syst. Avium Ethiop., pt. 1, 1924, p. 116.
[4] *cit. supra.*
[5] Journ. f. Ornith., 1914, p. 636.

### Microparra capensis (Smith)

*Parra capensis* A. Smith, Ill. Zool. S. Afr. Birds, pl. xxxii, 1839: Algoa Bay.

1 ♀, Kilosa, Tanganyika Territory, 1 June 1921.

"On June 1st I was wading in a temporary swamp just outside Kilosa township when I saw three of these birds running about on lily pads. As I had only a 12 bore shotgun and no. 5 shot with me, I hesitated some time before firing as I was afraid of damaging them. Eventually as the species was new to me, I retreated as far as was safe and fired at one which had separated from its companions. It dropped, hit by a single pellet and quite undamaged. I returned next day with a .410 collecting gun but the other two birds had left. Within a week, however, my collector secured a second female on inundated land near Tindiga within five miles of Kilosa. I might say that the rains had been exceptionally heavy that year and the swamp in question was not flooded to anything like the same extent in 1922 and 1923. In fact, the natives were unable to grow rice there one year.
"The ovules of the specimen listed above were enlarged." (A.L.)

This species is very local but occurs throughout the region covered by this paper. It seems to be common nowhere. In the northern part of its range (from southern Tanganyika Territory northwards) it seems to be absent from the coastal districts, but in Mozambique and Natal it has been taken in coastal swamps (Quilimane, Mozambique, Natal and in Algoa Bay, Cape Province).

## Family CHARADRIIDAE. Plovers, Turnstones, Surf-birds

### Charadrius hiaticula tundrae (Lowe)

*Acgialitis hiaticola tundrae* Lowe, Bull. Brit. Orn. Cl., **36**, 1915, p. 7: Yenesei Valley, Siberia.

1 ♀, Nairobi, Kenya Colony, 12 October 1915.
1 ♂, 1 ♀, Dar es Salaam, Tanganyika Territory, 14 January 1919.

"Also Lumbo, Mozambique." (A.L.)

Van Someren[1] records both *hiaticula* and *tundrae* from Kenya Colony yet all his measurements indicate only the latter form. The color of

[1] Nov. Zool., **29**, 1922, p. 14.

the back is somewhat variable, and not too trustworthy a character. The typical bird may, of course, occur east as far as the Rift Valley (Nakuru and Naivasha) and probably does occur in Uganda. A specimen in the Museum of Comparative Zoölogy from the south end of Lake Edward, eastern Belgian Congo, is *hiaticula*.

### Charadrius pecuarius pecuarius Temminck

*Charadrius pecuarius* Temminck, Pl. Col. livr. 31, pl. clxxxiii, 1823: Cape of Good Hope.

1 ♀, Mahaka, Dodoma, Tanganyika Territory, 25 March 1922.

The single specimen collected is about the average size for the race, having the following measurements: wing 102.5; tail 45; culmen 16 mm.

### Afroxyechus tricollaris tricollaris (Vieillot)

*Charadrius tricollaris* Vieillot, N. Dict. d'Hist. Nat. **27**, 1818, p. 147: Africa; restricted type locality, Capetown. (*cf.* C. Grant, Ibis, 1915, p. 57.)

1 ♂, 1 ♀, Dar es Salaam, Tanganyika Territory, 7 June 1918.
"Also Kilosa." (A.L.)

The male specimen has the forehead whiter, less tinged with buff, and the throat slightly grayer than the female.

### Ochthodromus mongolus atrifrons (Wagler)

*Charadrius atrifrons* Wagler, Isis, 1829, col. 650: Bengal.

1 ♀, Dar es Salaam, Tanganyika Territory, 15 January 1919.

This specimen is rather small, having a wing length of only 123.5 mm. The minimum given by Hartert[1] is 125 mm.

In Eastern Africa this form ranges only as far south as Zanzibar, Bagamoyo, and Dar es Salaam.

### Ochthodromus leschenaulti (Lesson)

*Charadrius leschenaulti* Lesson, Dict. Sci. Nat. (ed. Levrault), **42**, 1826, p. 36: Pondicherry.

1 ♂, 1 ♀, Lumbo, Mozambique, 5 October 1918.
1 ♂, Dar es Salaam, Tanganyika Territory, 15 January 1919.

[1] Vög. pal. Fauna, **2**, 1920, p. 1543.

This species appears to be more or less restricted to the coastal districts in Tanganyika Territory and in Mozambique. I know of no inland records. Van Someren[1] lists it only for the coast districts of Kenya Colony.

All the specimens are in winter plumage.

### Octhodromus asiaticus (Pallas)

*Charadrius asiaticus* Pallas, Reise Russ. Reichs, **2**, 1773, p. 715: S. Tartary.

1 ♀, Mwadira, Mwanza, Tanganyika Territory, 19 October 1922. "Also Dar es Salaam." (A.L.)

Unlike *O. leschenaulti*, the present bird occurs far inland in Eastern Africa.

### Squatarola squatarola squatarola (Linnaeus)

*Tringa squatarola* Linnaeus, Syst. Nat. 10th ed., 1758, p. 149: Europe; restricted type locality, Sweden.

1 ♂, Dar es Salaam, Tanganyika Territory, 14 January 1919.

The specimen is fully adult and in winter plumage. Even for an adult it is unusually light in color, especially on the underparts. It is extremely small, having a wing length of only 179 mm., 10 mm., less than the minimum given by Hartert.[2]

### Stephanibyx coronatus coronatus (Boddaert)

*Charadrius coronatus* Boddaert, Tabl. Pl. Enlum, 1783, p. 49: Cape of Good Hope (ex Daubenton).

3 ♂, Ekagango, Ankole, Uganda, 8 and 17 October 1919.
1 ♂, 1 ♀, Saranda, Tanganyika Territory, 6 October 1921.

"Also Mbunyi and West Kenya plains in Kenya Colony." (A.L.)

While with the Smithsonian-Chrysler Expedition, Loveridge collected two other specimens, both males, at Dodoma, Tanganyika Territory, 22 June, and 3 July, 1926. The female from Saranda and two of the Uganda males are immature. They resemble the adults except in the following particulars. They have the forehead and center

[1] Nov. Zool., **29**, 1922, p. 13.
[2] Vög. pal. Fauna, **2**, 1920, p. 1554.

of the crown brown while the adults have these parts black, and the young birds have the nape, scapulars, interscapulars, upper wing coverts and innermost secondaries (tertials) barred with brown and buffy.

This species is restricted to the inland plateau country of eastern Africa, not recorded from the coastal areas. It occurs even in the higher parts of the Uhehe tableland.

### Stephanibyx lugubris Lesson

*Charadrius lugubris* Lesson, Dict. Sci. Nat. (ed. Levrault), **42**, 1826, p. 36: no locality; Senegal *apud* Grant, Ibis, 1915, p. 56.

1 ♂, Morogoro, Tanganyika Territory, 15 June 1917.
1 ♀ ?, Morogoro, Tanganyika Territory, 27 June 1917.

"Also Dar es Salaam, and Kilosa." (A.L.)

Van Someren[1] writes that coastal specimens have narrower black bands separating the gray breast from the white abdomen than have inland ones. If this be substantiated by additional coastal material, the narrow-banded form will be found to have a limited regional distribution, as the Morogoro birds (Morogoro is about 100 miles inland) have the band as wide as in birds from Thika River (Kenya Colony) and Western Uganda (Toro).

The present specimens measure as follows: wing 178 (♂); 173 (♀ ?); tail 70.5 (♂); 69.5 (♀ ?); culmen 23 (♂), 22 (♀ ?).

### Hoplopterus spinosus (Linnaeus)

*Charadrius spinosus* Linnaeus, Syst. Nat. 10th ed., 1758, p. 151: Egypt.

2 adult ♀, Mwanza, Tanganyika Territory, 21 December 1922.

This species reaches its southern limit in northern Tanganyika Territory. Along the coast it is known as far south as Bagamoyo and Zanzibar, but inland it does not range south of the latitude of Mwanza, and Mamboia.

The two specimens collected have very short occipital crests, and are in worn plumage. They have extremely long tarsi, 75 mm. in length, nearly 10 mm. longer than any from Kenya Colony. In fact, out of a series of 40 specimens from the African continent, no others have a tarsal length of more than 69 mm. Two birds from Palestine, however, have tarsi measuring 73 and 77 mm., respectively.

[1] Nov. Zool., **29**, 1922, p. 15.

### Hoplopterus armatus (Burchell)

*Charadrius armatus* Burchell, Travels, **1**, p. 501, 1822: Klaarwater in the Hay district of Cape Province.

1 ♂, Kilimatinde, Tanganyika Territory, 5 October 1921.
1 ♀, Mahaka, Dodoma, Tanganyika Territory, 21 March 1922.

East African birds are not separable from South African examples.

The two specimens collected are not quite adult, having considerable brown among the black feathers of the breast. Most of the remiges are immature, only the innermost primaries and outermost secondaries having been molted and replaced by new ones which are not full grown. The tail is also molting in each of the birds. The order of molt is interesting. The outermost and the next to the middle pair are new and full grown; the middle pair are just growing out; the rest are old, immature, and brownish terminally.

This plover ranges slightly farther north than either Sclater[1] or van Someren[2] indicate. They both give no records north of Lakes Naivasha and Nakuru, but the species has been taken on the Northern Guaso Nyiro as well (specimen in the Museum of Comparative Zoölogy, C. P. Curtis coll.).

### Afribyx senegallus lateralis (Smith)

*Vanellus lateralis* A. Smith., Illustr. Zool. S. Afr., Aves, pl. xxiii, 1839: Tugela River, Natal.

1 ♂, Ndeza, Ankole, Uganda, 10 September 1919.
4 ♂, 3 ♀, Buchosa, Bukoba, Tanganyika Territory, 13–30 January 1923.

Soft parts: feet yellow; bill yellow with black tip; iris gray.

These eight birds all have the black abdominal band, thereby agreeing with van Someren's observations[3] that all his Uganda birds are *lateralis*, although Neumann[4] includes Uganda in the range of *senegallus*.

The distribution of this bird in Eastern Africa is rather peculiar. It occurs in Natal, Rhodesia, and Mozambique, and thence north through Tanganyika Territory, but in the latter country it seems to occur

[1] Syst. Avium Ethiop., pt. 1, 1924, p. 124.
[2] Nov. Zool., **29**, 1922, p. 16.
[3] Nov. Zool., **29**, 1922, p. 17.
[4] Orn. Monatsb., 1914, p. 8.

chiefly to the west of the Rift Valley, although specimens have been collected east as far as the coast itself. Van Someren[1] did not obtain it in Kenya Colony, and I know of no one who has done so. From Tanganyika Territory, the bird ranges north into Uganda, east to Mt. Elgon on the Kenya border.

Northern, and particularly northwestern, Uganda, is doubtful territory, as *senegallus* and *lateralis* meet in that area, but the birds from there are nearer to the latter race.

One of the females from Bukoba is subadult and has only a few white feathers on the crown. It also has less black on the throat than the adults.

### Hemiparra crassirostris hybrida Reichenow

*Hemiparra hybrida* Reichenow, Orn. Monatsb., **17**, 1909, p. 42: German East Africa (*i.e.* Tanganyika Territory).

1 ♂, 1 ♀, Mwanza, Tanganyika Territory, 8 December 1912.

The two birds differ in the distribution of black and white on the head. The male has the white extending back from the forehead to the middle of the upper margin of the eye, while in the female, the white extends to beyond the posterior margin of the eye. The male has a posterior white supraocular stripe connecting the white of the sides of the head with that of the crown; the female has none, as the white on the cranial dorsum extends back to connect with that of the auriculars. The male is also a little larger than the female, but this is probably individual: wing—♂ 200; ♀ 197 mm.

In spite of its curiously hybrid appearance (being intermediate between *crassirostris* and *leucoptera*), this race appears to be constant, and therefore recognizable. Sassi[2] records three birds from Kissaka, Urundi, and Lake Albert Edward, under the name *Hemiparra crassirostris*, but from his descriptions, they are all *hybrida*.

Recently Grant and Mackworth-Praed[3] have decided that *hybrida* is a synonym of *crassirostris* and that the type locality of the latter is really "the White Nile, between 3° and 4° N. Lat., Southern Sudan." and not Nubia as in all recent works. This still does not efface the differences in the plumage characters of the two "forms." More material is needed to settle this question.

[1] loc. cit.
[2] Annalen K. K. Naturhist. Hofmus. Wien, **26**, 1912, pp. 355–356.
[3] Bull. Brit. Orn. Cl., **56**, 1936, pp. 92–93.

## Family SCOLOPACIDAE. Snipe, Woodcock, Sandpipers

### Rostratula benghalensis (Linnaeus)

*Rallus benghalensis* Linnaeus, Syst. Nat. 10th ed., 1758, p. 153: Asia.

2 ♂, Kilosa, Tanganyika Territory, 25 April 1921.

Bangs[1] recognizes the Madagascan birds as a distinct race, *madagascariensis* Boddaert, writing that two specimens from that island are darker and more grayish than African examples. The present two birds from Tanganyika Territory agree very closely with those from Madagascar, and are slightly darker, more purplish, less greenish above than others from the Sudan. This indicates quite clearly that the variations thought by Bangs to be geographical are, in reality, merely individual.

African birds are, as a rule, slightly darker, more purplish gray, than birds in corresponding plumage from China, Japan, the Philippines, and India. Adequate series may show that African and Asiatic specimens are separable.

### Erolia testacea (Pallas)

*Tringa testacea* Pallas, in Vroeg's Cat. Adumbrat. 1764, p. 6: Holland.

1 ♂, 1 ♀, Dar es Salaam, Tanganyika Territory, 14 January 1919.

The curlew-sandpiper is a regular winter visitor in Tanganyika Territory, chiefly along the coast, but also inland to the great lakes.

The birds collected are in winter plumage and show no signs of molt. The female has a bill 41 mm. long, while that of the male is smaller, measuring 34.5 mm.

### Pisobia minuta (Leisler)

*Tringa minuta* Leisler, Nachtr. zu Bechst. Naturg. Deutschl., 1812, p. 74: near Hanau, Germany.

1 ♂, Lumbo, Mozambique, 5 October 1918.

This bird, together with two other males, was shot out of a large flock.

It is a regular winter visitor in Eastern Africa. It has been recorded from many localities in Tanganyika Territory, always near bodies of water such as Lake Jipe, where Jackson collected specimens, Baga-

[1] Bull. M. C. Z., **61**, 1918, p. 495.

moyo, Zanzibar, Manyara, etc. In Mozambique it is known chiefly from the coast, but this is due, in part at least, to the relatively little collecting that has been done in the interior. Some definite localities are Inhambane, Mozambique, Lake Shirwa (on the Nyasaland border, a record that indicates that the species occurs right across the Mozambique Territory), and Chinde.

### Crocethia alba (Pallas)

*Tringa alba* Pallas, in Vroeg's Cat. Adumbrat., 1764, p. 7: coast of the North Sea.

1 ♀, Dar es Salaam, Tanganyika Territory, 13 January 1919.

A regular winter visitor from the palearctic region, it has been found in Tanganyika Territory right across from Zanzibar, Dar es Salaam, and Bagamoyo on the coast to Bukoba and the borders of Ruanda.

The bird collected was molting the body feathers to a small extent when shot.

### Actitis hypoleucos (Linnaeus)

*Tringa hypoleucos* Linnaeus, Syst. Nat. 10th ed., 1758, p. 149: Europe; restricted type locality, Sweden.

1 ♀, Lumbo, Mozambique, 27 July 1918.
1 ♂, Lumbo, Mozambique, 4 September 1918.
1 ♂, Dar es Salaam, Tanganyika Territory, 29 January 1919.
1 ♀, Kilimatinde, Tanganyika Territory, 5 September 1921.
1 ♀, Kilosa, Tanganyika Territory, 5 October 1921.

Van Someren[1] writes that in Kenya Colony some birds remain throughout the year in suitable localities. The July record from Lumbo is probably such an instance. There is no indication in the skin that the bird was wounded and consequently unable to leave for the north. It is an adult in very worn plumage. The other specimen is a young bird with light edgings to the upper wing coverts.

### Rhyacophilus glareola (Linnaeus)

*Tringa glareola* Linnaeus, Syst. Nat. 10th ed., 1758, p. 149: Europe; restricted type locality, Sweden.

1 ♀, Kabale, Ruanda, Uganda, 21 September 1919.
1 ♂, Sanga, Ankole, Uganda, 24 October 1919.
1 ♀, Chantwara, Bukoba, Tanganyika Territory, 15 January 1923.

[1] Nov. Zool., **29**, 1922, p. 19.

The wood sandpiper is a regular migrant to all parts of Tanganyika Territory. Most of the published records are from the northern half of the country, but that is due to the fact that far more collecting has been done there than in the southern part.

All three birds are in worn plumage.

### Numenius arquata lineatus Cuvier

*Numenius lineatus* Cuvier, Regne Anim. 2nd ed., **1**, 1829, p. 521: India.

1 ♂, 1 ♀, Lumbo, Mozambique, 25 July 1918.

The present two specimens constitute the first record for the subspecies in Mozambique, and a very great southern extension of its winter range in the mainland of Africa. Sclater[1] gives the African range of *lineatus* as the, "Egyptian Sudan, Abyssinia, Western Africa, Madagascar, and the Seychelles." Considering that the race occurs in Madagascar, it is not surprising to find it equally far south on the African coast.

Bangs[2] calls the Madagascan birds *madagascariensis* Linnaeus. This name was revived by Van Oort[3] for the Siberian race which winters in Madagascar. However, it has been subsequently shown that the western, typical race, *arquata*, also occurs in Madagascar in winter, which complicates matters. Furthermore, in the description of *madagascariensis* the lower back and rump are said to be dark brown with grayish edges to the feathers, a character found in neither *arquata* nor *lineatus*. The name *madagascariensis* is therefore not wholly identifiable and is best treated as a doubtful synonym of *arquata* and of *lineatus*, as has been done by Hartert.[4]

At Dar es Salaam, Tanganyika Territory, curlews of this species were noted as very common by Loveridge, but as no specimens from there are available I cannot say to what race they belong. Likewise Grote[5] records curlews of this species in Southeastern Tanganyika Territory, but gives no indication of their subspecific identity. Van Someren[6] lists only the typical form from Mombasa and Manda Island, Kenya Colony.

[1] Syst. Avium Ethiop., pt. 1, 1924, p. 134.
[2] Bull. Mus. Comp. Zool., **61**, 1918, p. 494.
[3] Notes Leyden Mus., 1910, **32**, p. 116.
[4] Vög. pal. Fauna, **2**, 1921, pp. 1642–1644.
[5] Journ. f. Ornith., 1912, p. 508.
[6] Nov. Zool., **29**, 1922, p. 18.

The species is very variable in size, especially with respect to the length of bill. The female collected has a culmen 159 mm. long (chord), while the male's measures but 138 mm. (chord). Hartert[1] gives the maximum for old females as 184 mm.

The eastern form *lineatus* is said to differ from the western *arquata* in being lighter above; in having the lower back and rump almost pure white, without blackish streaks; and in having the streaks on the underparts narrower. The last two characters hold very well; the first is less reliable, more variable.

Neumann has recently[2] described a form with a short bill, called *suschkini*. According to information received through the late Mr. Bangs from Dr. Serebrowsky this race is no good.

## Family RECURVIROSTRIDAE. Avocets, Stilts

### Himantopus himantopus (Linnaeus)

*Charadrius himantopus* Linnaeus, Syst. Nat. 10th ed., 1758, p. 151: Southern Europe.

1 ♂, 1 ♀, Singida, Tanganyika Territory, 15 October 1921.

"Quite common along the lake shore at Singida." (A.L.)

Both specimens have the top of the head and the back of the neck grayish. The male has the crown quite dark, more so than the female. Both are subadult.

## Family DROMADIDAE. Crab-plovers

### Dromas ardeola Paykull

*Dromas ardeola* Paykull, K. Vet.-Akad. Handl. Stockholm, **26**, 1806, pp. 182, 188, pl. viii: India.

1 ♂, 1 ♀, Dar es Salaam, Tanganyika Territory, 27 January 1919.

"Large flocks were to be seen daily at the time these specimens were obtained but none were seen on subsequent visits." (A.L.)

The female is not fully adult, the black of the back being washed with brownish-gray, and the back of the neck, the occiput, and crown

[1] cit. supra.

[2] Orn. Monatsb., 1929, p. 76: Degama, Senegal.

streaked with dark grayish. The male has an unusually long bill; the culmen measures 64 mm., while the maximum given by Reichenow[1] is only 60 mm. The female has a bill 55 mm., long. In its other dimensions the male is not remarkable; wing 207, tail 73, tarsus 94.5 mm.

The crab plover is entirely a coastal bird of Eastern Africa and occurs south as far as Natal. It also occurs in India and the islands of the Indian Ocean, including Madagascar.

## Family OEDICNEMIDAE. Thick-knees

### Oedicnemus capensis capensis Lichtenstein

*Oedicnemus capensis* H. Lichtenstein, Verz. Doubl. 1823, p. 69: Cape of Good Hope.

1 ♂, Morogoro, Tanganyika Territory, 3 May 1917.
1 ♀, Pooma, Singida, Tanganyika Territory, 14 October 1921.
Young, unsexed, Singida, Tanganyika Territory, 25 October 1921.
1 ♀ ?, Sagayo, Mwanza, Tanganyika Territory, 8 November 1922.

"Also Zengeragusu." (A.L.)

This dikkop is widely distributed throughout the region covered by this collection.

Mrs. Meinertzhagen[2] gives the minimal wing length of this race as 224 mm., for the male and 222 mm., for the female. The present birds are smaller, the male having a wing only 221 mm., long, while the female (?) from Sagayo has a wing length of 218 mm. The female from Pooma agrees with Mrs. Meinertzhagen's data; its wing measures 230 mm.

The juvenal bird is in the late stages of the post-natal molt. The natal down still present on the underparts is white; that on the upperparts light tawny gray with tawny tips. The juvenal feathering resembles that of the adults except that the feathers of the upperparts have broad median dark brown streaks and are not heavily spotted as in adult birds.

### Oedicnemus vermiculatus vermiculatus Cabanis

*Oedicnemus vermiculatus* Cabanis, Journ. f. Ornith., 1868, p. 413: East Africa; that is, Lake Jipe, near Teita, Kenya Colony (*vide* Finsch and Hartlaub, Vög. Ostafr., p. 623).

[1] Vög. Afr., **1**, 1901, p. 203.
[2] Ibis, 1924, p. 344.

1 ♂, Dar es Salaam, Tanganyika Territory, 24 June 1918.
1 ♀, Dar es Salaam, Tanganyika Territory, 4 February 1919.

"Fairly common on the outskirts of Dar es Salaam." (A.L.)

The female is generally darker and more heavily vermiculated above than the male. This is also true of a pair from Kenya Colony, and may prove to be a constant sex difference.

The present specimens are small, being even smaller than the minimal figures given by Mrs. Meinertzhagen.[1] They measure as follows: ♂, wing 196; tail 98; culmen 41.5 mm.; ♀, wing 195; tail 104.5; culmen 43.0 mm.

This dikkop occurs throughout the region treated of in this paper.

## Family GLAREOLIDAE. Pratincoles, Coursers

### Cursorius temminckii temminckii Swainson

*Cursorius temminckii* Swainson, Zool. Illustr., **2**, 1822, pl. cvi: Senegal (*cf.* Swainson, B. W. Afr. **2**, 1837, p. 230).

1 ♂, 1 ♀, Morogoro, Tanganyika Territory, 31 May 1917.
1 ♂, Kibosi, Ruanda, Uganda, 4 October 1919.
1 ♂, 3 ♀, Ekagango, Ankole, Uganda, 17 October 1919.
1 ♂, Kilosa, Tanganyika Territory, 20 June 1921.

"Of the three birds from Tanganyika Territory the Kilosa specimen has the abdominal black spot most extended, and is darker above, especially on the head, than the two from Morogoro." (A.L.)

Means[2] described a dark-backed race, *jebelensis*, from the Lado Enclave. Recent workers have either disregarded this proposed form or have considered it unrecognizable. Van Someren[3] notes that five birds from Uganda are darker above than specimens from Kenya Colony and have the black adbominal patch larger, extending almost to the vent. He writes that C. H. B. Grant[4] remarked that three birds collected in Uganda and Kenya Colony, " . . . are rather darker on the back than West or South African birds." As a matter of fact, what Grant did actually write was that, " . . . they are rather dark coloured specimens . . . ; they are, however, matched by specimens

[1] Ibis, 1925, p. 342.
[2] Smiths. Misc. Coll., **65**, no. 13, Nov. 26, 1915, p. 6.
[3] Nov. Zool., **29**, 1922, p. 12.
[4] Ibis, 1915, p. 60.

from both West and South Africa, and I can see no constant character that differentiates the eastern birds." The present series from Uganda and Tanganyika Territory corroborates both van Someren and Grant. The Uganda birds are slightly darker above than more eastern ones, but, as noted by Loveridge, the male from Kilosa is a dark specimen, and matches the darkest of the Uganda birds. It may well be that the Uganda birds are *jebelensis* as they are constantly darker above, although occasional eastern birds approach, or even equal them in the intensity of pigmentation. However, without typical *jebelensis* material at hand, I prefer to unite them as Sclater[1] has done.

The Kilosa bird is different from all others examined in that it has the entire top of the head deep, rich russet while the others have it more tawny except at the posterior edge. The specimen most like the Kilosa example is a female from the Rutshuru River, eastern Belgian Congo.

These birds vary individually in the color of the breast, some being lighter, more olivaceous than others, regardless of age, sex, locality, or season. Also the black abdominal patch is variable, but part of this may be due to the way the skins are made.

The species occurs throughout the region covered by this paper, not only latitudinally and longitudinally but altitudinally as well. It has been taken as high as 9,000 feet above the sea, and also on the coast.

*Cursorius ruvanensis* Madarasz, a name apparently overlooked by Sclater[2], described from the Ruwana Steppes[3], is based on a dark bird with the forehead earth-brown, not reddish brown. However, this latter character is apparently one of age, and cannot be used in separating races. The colored figures[4] of *ruvanensis* and of *temminckii* are very poorly reproduced and neither resembles any of the specimens in shade of color. There is no doubt in my mind that *ruvanensis* is nothing but a dark specimen (like the one from Kilosa) of *temminckii* and is therefore a straight synonym of the latter.

### Rhinoptilus africanus illustris Friedmann

*Rhinoptilus africanus illustris* Friedmann, Proc. N. Eng. Zool. Cl., **10**, 1928, p. 80: Kididimo, Dodoma, Tanganyika Territory.

1 ♀, Samumba, Singida, Tanganyika Territory, 25 February 1922.
1 ♂, Kididimo, Dodoma, Tanganyika Territory, 12 April 1922.

[1] Syst. Avium Ethiop., pt. 1, 1924, p. 137.
[2] *loc. cit.*
[3] Ann. Mus. Hung., **13**, 1915, p. 393.
[4] pl. x, *cit. supra.*

The male from Kididimo is the type of *illustris*.

This is the palest of all the races of *Rhinoptilus africanus;* less rufescent than *bisignatus* of Angola, and very much paler than *gracilis* of Kenya Colony and extreme northern Tanganyika Territory. It occurs in the arid portions of central Tanganyika Territory from Dodoma to Singida and Mwanza.

The bird from Samumba is the palest of 4 specimens of *illustris* examined.

### Rhinoptilus cinctus emini Zedlitz

*Rhinoptilus cinctus emini* Zedlitz, Journ. f. Ornith., **62**, 1914, p. 624: Ukerewe Island, Victoria Nyanza.

1 ♂, Zengeragusu, Singida, Tanganyika Territory, 2 November 1921.
1 ♀, Ushora, Singida, Tanganyika Territory, 2 November 1921.

The male was incubating an egg when collected. There was no real nest, just a depression in the sand in which the egg was buried with only the top showing. This has been published on by Loveridge[1] but was unfortunately referred to the typical subspecies to which it does not belong.

Emin's courser occurs in northwestern Tanganyika Territory south and west of Victoria Nyanza, east to the Rift Valley. The present specimens constitute the easternmost records for the race. The male agrees with *seebohmi* in size having a tarsal length of 72 mm., but is like *emini* in the pattern of the rectrices. It may be that *seebohmi* occurs eastwards through Northern Rhodesia and Nyasaland into Tanganyika Territory where it intergrades with *emini*, producing individuals of this sort.

These two specimens are subadult, being very gray above, the crowns almost blackish brown. Two others, both females, now in the American Museum of Natural History, were collected by Loveridge at Ulugu, Ushora; and Mahaka, Manyoni district, Tanganyika Territory. They have tarsi 67 and 71 mm. long, respectively.

### Rhinoptilus chalcopterus (Temminck)

*Cursorius chalcopterus* Temminck, Pl. Col. livr. 50, pl. ccxcviii, 1824: Senegal.

1 ♂, Morogoro, Tanganyika Territory, 24 May 1917.
1 ♀, Morogoro, Tanganyika Territory, 30 May 1917.
1 ♀, Kinyambwa, Dodoma, Tanganyika Territory, 13 April 1922.
"Also Dar es Salaam." (A.L.)

[1] Proc. Zool. Soc. Lond., 1923, p. 921.

The two Morogoro specimens have better developed white superciliaries than does the one from Dodoma. The former also have darker throats and breasts than the latter.

The conclusions against the validity of more than one form of this bird reached by Grant and Mackworth-Praed[1] are upheld by the material studied in the present connection.

## Family LARIDAE. Gulls, Terns

### Hydrocoloeus cirrhocephalus poiocephalus (Swainson)

*Larus poiocephalus* Swainson, Birds W. Africa, **2**, 1837, p. 245: no type locality; probably "West Africa."

1 unsexed, Mwanza, Tanganyika Territory, 6 December 1922.

This specimen is in unusual plumage. It agrees with Dwight's description[2] of the second winter or non-nuptial plumage in every way, but still possesses a few brownish lesser upper coverts on each wing, feathers that cannot be anything but remnants of the juvenal plumage!

Generally distributed throughout the region covered by this collection.

### Larus hemprichii (Bruch)

*Adelarus hemprichii* Bruch, Journ. f. Ornith., 1853, p. 106: Red Sea.

1 ♂, 1 ♀, Dar es Salaam, Tanganyika Territory, 4 January 1919.

"Decidedly scarce; very few were seen along the coast." (A.L.)

The male is rather small, having a wing of only 331 mm. This is only 1 mm. greater than the smallest of a series of ten measured by Dwight.[3]

The female is in the second winter plumage according to Dwight's nomenclature of plumages and molts, while the male is in the third winter plumage. The tail of the female is apparently somewhat unusual (judging by Dwight's comments) in that the outermost pair of rectrices are pure white, while the rest of the rectrices have broad

[1] Bull. Brit. Orn. Cl., **56**, 1936, pp. 103–104.
[2] Bull. Am. Mus. Nat. Hist., **52**, 1925, p. 273.
[3] Bull. Amer. Mus. Nat. Hist., **52**, 1925, p. 154.

blackish brown bands increasing in size centripetally, being broadest in the center pair, which also lack the whitish tips almost entirely.

### Chlidonias leucoptera (Temminck)

*Sterna leucoptera* Temminck, Man. d'Orn., 1st ed., 1815, p. 483: shores of the Mediterranean.

1 ♂, 1 ♀, Mahaka, Manyoni, Tanganyika Territory, 30 March 1922.

"This species was very abundant on a lake at Mahaka, where a series was obtained by my collector." (A.L.)

The male has a longer bill than the female (male 26.5, female 24 mm). Both birds are in non-breeding plumage.

## Order COLUMBIFORMES

### Family PTEROCLIDAE. Sand-Grouse

### Eremialector decoratus loveridgei Friedmann

*Eremialector decoratus loveridgei* Friedmann, Proc. N. E. Zool. Cl., **10**, 1928, p. 79: Dodoma, Tanganyika Territory.

1 ♂, Dodoma, Tanganyika Territory, 5 December 1918.
1 immature ♂, 1 adult ♀, Kinyambwa, Tanganyika Territory, 13 April 1922.

"Also Simbiti River. Flocks were numerous at Dodoma in 1918." (A.L.)

This is the southernmost of the three races of this sandgrouse and is easily told from the typical form immediately to the north by its much lighter color. It is as light as the Somaliland form *ellenbecki*, but essl yellowish and more broadly barred with blackish-brown.

Through the courtesy of Dr. James P. Chapin, I have had the opportunity of examining the specimen collected by Loveridge on the Simbiti River, and now in the American Museum of Natural History. It is a female, less mature than the one from Kinyambwa, and has the bars on the chest lighter brown, the middle of the back slightly darker, the worn (juvenal or immature) feathers dull earth-brown, and is molting the remiges, apparently coming into adult plumage.

The male from Dodoma is the type of this race.

### Eremialector gutturalis saturatior (Hartert)

*Pterocles gutturalis saturatior* Hartert, Nov. Zool., **7**, 1900, p. 29: Campi ya Simba, Ukamba district, Kenya Colony.

1 ♂, 1 ♀, Simba, Kenya Colony, 6 September 1915.
1 ♂, Simbiti River, Mkalama, Tanganyika Territory, 13 October 1922.
1 ♀, Mwadira, Mwanza, Tanganyika Territory, 19 October 1922.

"Large flocks were seen on the Wembere Flats and on suitable plains throughout the Mwanza district." (A.L.)

The male from Simbiti, Tanganyika Territory, is somewhat intermediate between *saturatior, tanganjicae,* and *gutturalis,* and is rather difficult to place in any one race with any degree of certainty. It seems, however, to be closer to *saturatior* than to either of the others, and is therefore considered as of this subspecies.

The female from Mwadira has the light markings of the upperparts extremely pale, in which respect it approaches *tanganjicae,* a race which I know only from descriptions.

## Family COLUMBIDAE. Pigeons

### Columba guinea guinea Linnaeus

*Columba guinea* Linnaeus, Syst. Nat. 10th ed., 1758, p. 163: Guinea (ex Edwards).

1 ♂, 1 ♀, Ulugu, Ushora, Tanganyika Territory, 7 November 1921.

"Also Saranda, Suna, Mbulu's, and Mtali's. Guinea pigeons nest in the forts (boma) at both Mkalama and Kilimatinde." (A.L.)

These birds are what have been called by some workers Reichenow's form *longipennis.* However, the characters of *longipennis* do not hold and the name becomes a synonym of *guinea.* Grant[1] gives Ugogo as the type locality of *longipennis,* but does not state that it was so restricted by him at that point. In the original description no type is designated and the range is given as East Africa from Victoria Nyanza to Ugogo.

It is rather peculiar that in spite of Ugogo being the type locality of this synonym, Tanganyika Territory as a whole is not included in the range of *guinea* as given by Sclater[2] who states that it occurs from the

[1] Ibis, 1915, p. 37.
[2] Syst. Avium Ethiop., pt. 1, 1924, p. 161.

Sudan and Ankole Province, Uganda, south to Kenya Colony and Kilimanjaro (just south of the Tanganyika-Kenya border).

Lynes[1] found the species breeding at Iringa.

The male has the crown and nape darker than the female. The two specimens have wing lengths of 227 and 222 mm., respectively.

### Columba arquatrix arquatrix Temminck

*Columba arquatrix* Temminck, Pigeons, Colombes, 1809, p. 11, pl. v: Anteniquoi, that is, Knysna, Cape Province.

1 ♀, Ngong Forest, Nairobi, Kenya Colony, 21 September 1920.
1 ♂, 1 ♀, Uluguru Mountains, Tanganyika Territory, 14 May 1921.

"Also Eldoret, Kenya Colony." (A.L.)

*Columba arquatrix arquatricula* Bonaparte is a synonym.

This pigeon occurs throughout the region covered by this paper but is rather local and spotty in its distribution, being confined to forested areas.

Van Someren[2] writes that his series from Kenya Colony are less reddish above than South African birds, and have a distinct greenish sheen on the inner secondaries and coverts which in South African birds are dull brownish. This is not upheld by the present specimens or others of a series in the Museum of Comparative Zoölogy.

The bird from Ngong Forest (near Nairobi) is just coming into adult plumage, but still has some rufous-tipped lesser upper wing-coverts and a few of the immature interscapulars.

### Turturoena delegorguei sharpei Salvadori

*Turturoena sharpei* Salvadori, Cat. Birds Brit. Mus., **21**, 1893, p. 329, pl. ix, fig. 3: Mt. Elgon, Kenya Colony.

1 ♂, Uluguru Mountains, Tanganyika Territory, 14 May 1921.
1 ♀, Bungu, Usambara, Tanganyika Territory, September 1921.

"Also Ngong, Kenya Colony." (A.L.)

These two specimens and two others from the Uluguru and the Usambara Mountains (recorded in Ibis, 1928, p. 76) seem to be the southernmost records for the race, together with one collected by Emin

[1] Journ. f. Orn., **82**, 1934, Sonderheft, p. 51.
[2] Nov. Zool., **29**, 1922, p. 34.

at Nguru.[1] The male is in full adult plumage and has the greenish sheen strongly developed on the nape. Unfortunately the feathers of the nape and throat were twisted and misplaced when the bird was skinned. The bird is very dark for this race.

This pigeon is a bird of the highland forests and consequently has a very discontinuous distribution throughout Kenya Colony and northern Tanganyika Territory. It has not been recorded in the forests of western Uganda, or anywhere west of Mt. Elgon as far as I know, rather a peculiar distribution for a forest species. In Kenya Colony van Someren[2] found it, " . . . essentially confined to the forest of the higher altitudes, ranging from Kilimanjaro to Mt. Elgon . . . ," but he records seeing and collecting it as well, " . . . in the coastal belt in the Sekoke Forest and on the Rabai Hills (near Mombasa), but in these localities they are not permanently resident, though they visit these areas when a particular tree is heavy in fruit."

### Streptopelia lugens (Rüppell)

*Stigmatopelia lugens* Rüppell, N. Wirbelth., Vög. 1837, p. 64, pl. xxii, fig. 2: Ethiopian highlands (Taranta Mountains, Tigre).

Nestling, unsexed, Nairobi, Kenya Colony, 22 June 1919.
Adult, unsexed, Ngong Forest, Kenya Colony, 30 July 1919.
Adult ♂, Ngong Forest, Kenya Colony, 21 September 1920.
Adult ♂, Eldoret, Kenya Colony, 8 November 1920.

The race *funebrea*, said to be smaller and darker than typical *lugens*, is no good, and the name becomes a straight synonym of *lugens*.

This pigeon has a rather mixed environmental distribution that is difficult to appreciate from museum specimens. In the breeding season it occurs only in forest areas and therefore has a very spotted, discontinuous range. However, in the non-breeding season it is found in more open country and then has a more even distribution. It occurs throughout Kenya Colony and the northern half of Tanganyika Territory south to Northern Nyasaland, but not in Mozambique as far as known.

The nestling is well advanced in the post-natal molt. The natal down is light straw yellow; the juvenal plumage is dark earth brown above, each feather edged with rufous; more grayish on the underparts, lighter on the throat than elsewhere.

[1] Listed by Reichenow, Vög. Afrikas, **1**, 1931, p. 418.
[2] Journ. E. Afr. and Uganda Nat. Hist., Soc. July 1927, p. 79.

### Streptopelia semitorquata semitorquata (Rüppell)

*Columba semitorquata* Rüppell, N. Wirbelth., Vög. 1837, p. 66, pl. xxxiii, fig. 2: Taranta Mountains, Ethiopia.

1 ♂, 1 ♀, Ngong Forest, Nairobi, Kenya Colony, 20 September 1920.
1 ♂, Kilosa, Tanganyika Territory, 1 July 1921.
1 ♂, Kilosa, Tanganyika Territory, 12 July 1921.
1 ♂, Bagilo, Uluguru Mountains, Tanganyika Territory, 4 May 1922.
1 ♂, 1 ♀, Kome Island, Mwanza, Tanganyika Territory, 24 November 1922.
1 ♂, Chantwara, Bukoba, Tanganyika Territory, 2 January 1923.

"Also Tumutumu, Kenya Colony." (A.L.)

*Streptopelia semitorquata intermedia* (Erlanger) is a synonym, as is also *S. s. erythrophrys* (Swainson).

These birds are quite variable, some being much paler on the breast and abdomen than others, but the differences are wholly individual.

The species is commonly distributed throughout the region covered by this paper. It occurs from sea level to about 10,000 feet, chiefly around forest patches, but also in thick thorn-bush jungle and around clearings and settlements.

### Streptopelia decipiens perspicillata (Fischer and Reichenow)

*Turtur perspicillata* Fischer and Reichenow, Journ. f. Ornith., **32**, 1884, p. 179: Nguruman, Masailand.

1 ♂, 1 ♀, Mahaka, Manyoni, Tanganyika Territory, 1 April 1923.

This race of the pink-breasted dove occurs in Tanganyika Territory from the southern shores of Lake Victoria (Mwanza district) east and north to the Kilimanjaro area and the Kenya border, and in Kenya Colony as far north as the Southern Guaso Nyiro. It is an inhabitant of the thorn-bush country, but seems to be restricted to (or at least is most numerous in the vicinity of) streams or other bodies of water.

The male is somewhat larger than the female and has the nape grayish like the crown, while the latter has the occiput and nape tinged with vinaceous. The wing length of the two specimens are 168 (♂) and 157 mm. (♀), both being rather large according to the data presented by Zedlitz.[1]

[1] Journ. f. Ornith., 1914, p. 648.

### Streptopelia decipiens permista (Reichenow)

*Turtur ambiguus permistus* Reichenow, Vög. Afr., **3**, 1905 p. 808: Victoria Nyanza to the Zambesi; type in the Berlin Museum from Maliwungu, Tanganyika Territory.

1 ♀, Buchosa, Bukoba, Tanganyika Territory, 30 November 1922.
1 ♂, Kabare, Bukoba, Tanganyika Territory, 30 January 1923.

This race inhabits the regions in Tanganyika Territory to the west and south of the area occupied by *perspicillata*, south through Mozambique to the valley of the Zambesi, and north to Western Uganda, and possibly farther.

The male is not fully adult and has some brownish feathers on the crown and occiput, and also some immature lesser upper wing coverts. The female is slightly darker pink on the underparts.

### Streptopelia capicola tropica (Reichenow)

*Turtur capicola tropica* Reichenow, Orn. Monatsb., 1902, p. 139: East Africa; type in Berlin Museum from Songea, Tanganyika Territory.

A single specimen (female) taken at Eldoret, Kenya Colony, and now in the American Museum of Natural History, has been referred to this race by Dr. J. P. Chapin.

In 1921 Reichenow[1] separated eastern birds from Angolan *damarensis* on the basis of smaller size, and coined for them the name *suahelica*. No type locality or type specimen was designated, but in answer to my inquiry Dr. Stresemann kindly informs me that the type of *suahelica* came from Magagoni on the Ruvu River. The name therefore is a synonym of *tropica*. The name *suahelica* was overlooked by the Zoological Record and is not mentioned by Sclater in the Systema Avium Ethiopicarum. It was therefore by chance that I came across it while looking up something else.

### Streptopelia capicola anceps Friedmann

*Streptopelia capicola anceps* Friedmann, Proc. N. Eng. Zool. Cl., **10**, August 20, 1928, p. 67: Kilosa, Tanganyika Territory.

1 ♂, 1 ♀, Kilosa, Tanganyika Territory, 12 February 1921.

The male bird is the type of the race.

[1] Journ. f. Ornith., 1921, p. 264.

While with the Smithsonian-Chrysler Expedition, Loveridge collected a female *anceps* at Dodoma, Tanganyika Territory, on 23 June 1916. This form is intermediate between *tropica* and *somalica* in appearance, resembling the former on the upperparts, and the latter on the underparts, but with the breast somewhat more vinaceous than in *somalica*.

In Tanganyika Territory three races of *S. capicola* occur as follows:

1. *tropica*: west of the Rift Valley, extending eastward in the southern part of the Territory.
2. *somalica*: coastal districts south to the Pangani River.
3. *anceps*: definitely known from Kilosa and Dodoma, probably ranges from the eastern escarpment of the Rift Valley to the coastal districts where it meets and intergrades with *somalica*.

### Stigmatopelia senegalensis aequatorialis (Erlanger)

*Turtur senegalensis aequatorialis* Erlanger, Orn. Monatsb., 1904, p. 98: Menaballa, Ethiopia.

1 ♂, Morogoro, Tanganyika Territory, 23 August 1917.
1 ♂, Lumbo, Mozambique, 15 July 1918.
1 ♀, Kilosa, Tanganyika Territory, 30 December 1920.

"Also Dodoma and Mpinga, Tanganyika Territory." (A.L.)

The eastern form, to which I have referred these specimens, is of somewhat doubtful validity. However, in the absence of any material of typical *senegalensis*, I prefer to follow the conclusions reached by Sclater[1] who keeps the two distinct. These three specimens certainly agree with the characters and plate given by Erlanger[2] but others from Kenya Colony and Ethiopia are more reddish above and below, thereby suggesting that the color characters are very variable. If *aequatorialis* should eventually prove to be indistinguishable from *senegalensis* (as indeed is claimed by several writers), then all the birds of the territory covered by this report, would have to be considered as of the typical race.

This pigeon occurs throughout the region under discussion except in forest areas, and not higher than 6,000 feet in the mountains or highlands. It occurs in cultivated districts as well as in the thorn-bush country.

A nest with two eggs was found at Morogoro on 1 August 1917.

[1] Syst. Avium Ethiop., pt. 1, 1924, p. 170.
[2] Journ. f. Ornith., 1905, p. 117.

### Oena capensis capensis (Linnaeus)

*Columba capensis* Linnaeus, Syst. Nat. 12th ed., **1**, 1766, p. 286: Cape of Good Hope.

1 ♂, 1 ♀, Dodoma, Tanganyika Territory, 6 December 1918.

"Also Nairobi and Kilosa." (A.L.)

While with the Smithsonian-Chrysler Expedition, Loveridge collected another male at Dodoma on 14 June 1926. It is now in the United States National Museum.

This species is distributed throughout the region under discussion. *Oena capensis anonyma* Oberholser[1] is a synonym.

### Tympanistria tympanistria fraseri Bonaparte

*Tympanistria fraseri* Bonaparte, Comp. Av. **2**, 1855, p. 67: Fernando Po.

1 ♂, Mbugwe, Buddu, Uganda, 31 August 1919.
1 ♂, Morogoro, Tanganyika Territory, 28 February 1918.
1 ♂, 1 ♀, Bungu, Usambara, Tanganyika Territory, September 1921.
2 ♂, Kome Island, Mwanza, Tanganyika Territory, 24 November 1922.

"Also Tumutumu and Nairobi, Kenya Colony; Uluguru Mountains, and Kilosa, Tanganyika Territory." (A.L.)

This dove is widespread throughout the region covered by this paper, but is found only in well-wooded areas, such as tree-lined river banks as well as in true forest. It occurs in the mountains up to as high as 7,000 feet, but is not common at altitudes of more than about 6,000 feet.

The metallic wing spots are deep purplish-blue in the males from Morogoro, Bungu, and one from Kome Island, while in the other two (Mbugwe and Kome Island) they are green. In this connection it may be noted that Ogilvie-Grant[2] writes of a closely allied species *Chalcopelia afra* that the wing spots are purple in freshly molted birds, but become green with wear and exposure. In the present case there is no difference in wear or age of the plumage between the birds with green spots and those with blue ones. In fact, the two birds taken together at Kome Island are exactly alike as regards wear, etc., but differ in the color of the spots. It certainly appears that Ogilvie-Grant was wrong in his statement, and that he was probably misled by a coincidence of wear and spot-color.

[1] Proc. U. S. Nat. Mus., **28**, 1905, p. 843.
[2] Ruwenzori Exp. Rpts., Aves, Trans. Zool. Soc. Lond., **19**, 1910, p. 450.

Van Someren[1] writes that the mature but, " . . . youngish female has a decided band (on the breast) which is tinged with ashy-brown." Judging by this observation, the female taken at Bungu is "youngish" as it has the whole pectoral area dull gray, each feather tipped with pale brownish.

### Turtur chalcospilos chalcospilos (Wagler)

*Columba chalcospilos* Wagler, Syst. Av. Columba, sp. 82, 1827: "Terra Caffrorum," that is, Eastern Cape Province.

1 ♂, 1 ♀, Dar es Salaam, Tanganyika Territory, 2 July 1918.
1 ♀, Kilosa, Tanganyika Territory, 16 July 1921.
1 ♂, Kilosa, Tanganyika Territory, 21 July 1921.
"Also Tumutumo, Kenya Colony; Morogoro, Tanganyika Territory; and Lumbo, Mozambique." (A.L.)

While with the Smithsonian-Chrysler Expedition, Loveridge collected another (♀) at Dodoma, Tanganyika Territory, 13 June 1926.

The Lumbo specimens are listed as subsp. *caffra* ? by van Someren[2] who writes that they (2 ♂, ♀) are darker on the underside than East African specimens and the wing speculum is not constantly green, being purplish-blue in one bird, half blue, half green in another, and in the other green.

This little dove is widely distributed over the territory covered by the present paper, where it is chiefly found in the dry thornbush country, but also along the coastal areas, while in the uplands of the interior it occurs commonly in the coffee shambas.

A great many names have been proposed for this bird, but all the so-called eastern forms are untenable. The birds from Tanganyika Territory and Kenya Colony would have to be considered as *acanthina* Oberholser if that race were recognized. The birds from Lumbo, questionably refered to *caffra* by van Someren, would probably have to be considered as *zambeziensis* Roberts, were the characters of that form constant.

### Turtur afer kilimensis (Mearns)

*Chalcopelia afra kilimensis* Mearns, Proc. U. S. Nat. Mus., **48**, 1915, p. 383: Kilimanjaro.

1 ♂, Bungu, Usambara Mountains, Tanganyika Territory, September 1921.

[1] Journ. E. Africa and Uganda Nat. Hist. Soc., no. 32, January 1928, p. 162.
[2] Nov. Zool., **29**, 1922, p. 36.

Gyldenstolpe[1] writes that *sclateri* Rothschild is distinct from *kilimensis* and that the former differs from the latter in having darker brown upperparts and the flanks and abdomen less tinged with cinnamon, more whitish. The present specimen is intermediate between the two, having the lighter upperparts of *kilimensis* and the whiter, less cinnamoneus flanks and abdomen of *sclateri*. However, the characters given by Gyldenstolpe hold none too well for West African birds. Specimens from Cameroon and Liberia vary in the color of the abdomen from practically pure white to much washed with cinnamon, and that of the upperparts likewise varies in shade. For the present, at least, I prefer to consider *sclateri* only doubtfully distinct from *kilimensis* and to call all the Tanganyika birds by the latter name. According to Gyldenstolpe, the birds of the western type occur east to Tanganyika Territory. In the eastern part of the region under consideration in this paper this species stops at the Tanganyika-Kenya border and occurs in the latter country only in its southwestern part (Kavirondo and Kisii), not being found in the coastal areas or in the highlands. In Tanganyika Territory and Uganda it is widespread in bushy, savanna districts, shunning true forest and dry Acacia country.

### Aplopelia larvata larvata (Temminck)

*Columba larvata* Temminck, Pig., Colombes, 1810, p. 71, pl. xxxi: Le pays d'Antiniquoi, that is, Knysna, Cape Province.

1 ♂, 2 ♀, Bagilo, Uluguru Mountains, Tanganyika Territory, 13 June 1922.

"Also seen at Madazini, south of Kilosa." (A.L.)

*A.* 1. *kilimensis* Neumann is a synonym.

This dove is a bird of the true forests, and, consequently, its distribution in the territory under discussion is very broken and discontinuous. In Tanganyika Territory it is known only from Kilimanjaro, Mt. Meru, the Usambara Mountains (Mlalo), and the Uluguru Mountains (Bagilo, Mkarazi, and Nyange). In Kenya Colony it has been taken at Taveta, Nairobi, Kyambu, the Meru forest near Mt. Kenya, and on Mt. Kenya itself, Kakamega, Escarpment, Mau, Cherangani, W. Elgon. It does not appear to be known from farther west than Mt. Elgon.

[1] Kung. Sv. Vet. Akad. Handlngr., 1924, p. 312.

### Vinago calva salvadorii Dubois

*Vinago calva salvadorii* Dubois, Proc. Zool. Soc. Lond., 1897, p. 784: eastern and central tropical Africa; restricted type locality, W. shores of Tanganyika (Hartert).

1 ♀, Kibosi, Ruanda, Uganda, 4 October 1919.
1 ♂, 2 ♀, Chantwara, Bukoba, Tanganyika Territory, 3 January 1923.

One of the Chantwara females is more or less intermediate between *salvadorii* and *brevicera*, and the one from Kibosi, Ruanda, is also not quite typical of this race.

This form occurs in Tanganyika Territory west of the Rift Valley (more especially west of Lakes Tanganyika in the Congo, and Victoria in Tanganyika Territory), thence north throughout Uganda, east to Mt. Elgon and the Elgeyu escarpment and Mau in Kenya Colony. All the fruit pigeons are great wanderers, their presence in any one spot being largely correlated with the ripening of wild figs and other fruits.

### Vinago calva brevicera (Hartert and Goodson)

*Treron calva brevicera* Hartert and Goodson, Nov. Zool., **25**, 1918, p. 353: Moshi, Kilimanjaro district.

1 ♂, Ngong Forest, Nairobi, Kenya Colony, 21 September 1920.

This race occurs east of the Rift Valley east as far as the Kilimanjaro-Taveta district. According to van Someren[1] this race is present in the Sotik and Kavirondo districts, around the north and east shores of Lake Victoria, but it is quite likely that the birds from the southern Sotik district may prove to be *granviki* or, at least, intermediate between *brevicera* and *granviki*.

### Vinago calva granviki (Grote)

*Treron calva granviki* Grote, Journ. f. Ornith., 1924, p. 102: Ukerewe Island, Lake Victoria.

1 ♀, Sagayo, Mwanza, Tanganyika Territory, 2 November 1922.

This specimen is referable to this race. The race, however, is merely an intermediate between *brevicera* and *salvadorii* and occupies the territory between their respective ranges, that is, west of the Rift Valley from Mkalama and the Wembere Steppes to the southern end

[1] Journ. E. Afr. and Uganda Nat. Hist. Soc. Jan., 1928, p. 177.

of Victoria Nyanza. It may be recognized as far as the material examined indicates, as it seems to be fairly constant in its characters. The naked basal part of the bill is nearly as extensive as in *salvadorii*, but the coloration of the plumage is lighter, especially on the underparts where it is noticeably lighter green, with a yellowish tone on the breast and middle of the abdomen.

### Vinago delalandii granti van Someren

*Vinago delalandii granti* van Someren, Bull. Brit. Orn. Cl., **40**, 1919, p. 20: Kilwa, Tanganyika Territory.

1 ♂, Morogoro, Tanganyika Territory, 15 August 1917.
1 ♂, Dar es Salaam, Tanganyika Territory, 7 November 1918.
1 ♀, Kilosa, Tanganyika Territory, 8 July 1921.
unsexed, Kilosa, Tanganyika Territory, 13 July 1921.
"Also Tindiga, Tanganyika Territory." (A.L.)

Grant's fruit pigeon is a coastal and subcoastal bird in the eastern half of Tanganyika Territory (south well into Mozambique) and occurs in the southern portion of the coastal districts of Kenya Colony as well. In southern Mozambique it is replaced by typical *delalandii* which is larger and less olive, more grayish, on the head and breast, less golden, more olive on the back, wings, and interscapulars, and less yellowish on the abdomen. However, a specimen (M.C.Z. 81103) from Komati River, Transvaal (near the border of Mozambique) is typical *granti*.

I have seen no material of *V. d. orientalis* Gunning and Roberts, but if it is a form of *delalandii* and not of *wakefieldii* (as treated by Sclater,[1] it may be that it will prove to be the same as *granti*. The brief description of *orientalis* given by Roberts in his South African Check List[2] fits the specimen from Komati River, which is also identical with *granti*.

### Vinago wakefieldii wakefieldii (Sharpe)

*Treron wakefieldii* Sharpe, Proc. Zool. Soc. Lond., for 1873, p. 715, pl. lviii, fig. 2, 1874: Mombasa.

1 ♀, Bungu, Usambara Mountains, Tanganyika Territory, September 1921.

[1] Syst. Avium Ethiop., pt. 1, 1924, p. 176.
[2] Ann. Transvaal Mus., **10**, 1924, p. 124.

Wakefield's fruit pigeon occurs in the northern half of Tanganyika Territory east of the Rift Valley, merging south of the Pangani River with *V. w. orientalis*. Its range extends northward into the coastal area of Kenya Colony, spreading inland along the valleys of the Tana and Juba Rivers. In Tanganyika Territory it occurs away from the coastal districts only in mountainous districts such as the Usambara range, whence it is known from Bungu, Amani, and Lushoto. It appears not to have been taken in the Uluguru range as yet, but quite possibly occurs there. It is, however, probably sporadic in its distribution, as forested areas are few and far between in the inland nyika of the Territory. Bangs and Loveridge[1] record it from Ilolo, Rungwe district. Lynes[2] has taken a specimen and seen numbers of individuals at Iringa.

## Order CUCULIFORMES

### Family MUSOPHAGIDAE. Plantain-eaters

#### Turacus livingstonii cabanisi (Reichenow)

*Corythaix cabanisi* Reichenow, Journ. f. Ornith., 1883, p. 221: Bagamoyo, Tanganyika Territory.

1 ♂, Morogoro, Tanganyika Territory, 28 November 1918.
1 ♀, Uluguru Mountains, Tanganyika Territory, 13 May 1921.
1 ♀, Uluguru Mountains, Tanganyika Territory, 19 May 1921.
"Also Bagilo, Madazini, Mbala." (A.L.)

This race differs from typical *livingstonii* in having the rump and tail more bluish.

Neumann[3] has reviewed the remarkable and perplexing color variations of the birds of the *livingstonii* group and has found it difficult to know what to do with *T. reichenowi* Fischer. This latter bird is more bluish and occurs side by side with *livingstonii cabanisi* in Tanganyika Territory. Reichenow described birds intermediate in color between the two under the name *hybridus*, making three so-called forms living together and differing only in the amount of greenish or bluish color on the upperparts. I have examined a series of twelve adults from the Uluguru Mountains and find all three types represented, that is, some green birds (*cabanisi*); some more bluish (*hybridus*); and some bluish

[1] Bull. Mus. Comp. Zool., **75**, 1933, p. 165.
[2] Journ. f. Orn., **82**, 1934, Sonderheft, p. 53.
[3] Nov. Zool., **15**, 1908, pp. 376–377.

ones (*reichenowi*). However, the series is unbroken from one extreme to the other, and it would be not only impossible and arbitrary to divide it into named groups, but also unnatural and misleading. *T. livingstonii cabanisi* is a variable bird and *hybridus* and *reichenowi* are synonyms based on selected individuals.

In my report on Loveridge's Uluguru-Usambara collection[1] I referred his series to *cabanisi* without any comment on the color variations as that paper was rather hurriedly written. However, it should be noted that Reichenow[2] calls Uluguru specimens *hybridus*. Of the three, *hybridus* is by description the most variable, and it is therefore not impossible, although quite improbable, that I have no true *cabanisi* or *reichenowi* in my series at all, but only a variable series of the intermediate type.

The measurements of the birds are as follows:

♂ wing 165–177; tail 190–200; culmen from base 21–23 mm.

♀ wing 165–179; tail 187–213; culmen from base 22–25.5 mm.

These figures extend the limits of variation, beyond those given by Reichenow[3] who writes as follows: wing 170–180; tail 200–215; culmen 23–25 mm.

The exact range of *cabanisi* depends on whether we recognize *reichenowi* and *hybridus* as different, or put them all together. I incline to the latter view, in which case the bird is known to inhabit Tanganyika Territory from the coast at Bagamoyo and Dar es Salaam south to Beira in Mozambique; inland only in Tanganyika Territory to the Uluguru Mountains, Morogoro, Kipunga, Usegua, Usagara, Mawudjo, Mbala, Maruji, Madazini, Ugogo, Mpwapwa, to the Uzungwe Mountains and the Mahenge district and the north end of Lake Nyasa where it intergrades with typical *livingstonii*. Its altitudinal range is therefore from sea level to about 8,000 feet.

The breeding season is probably rather indefinitely spread out, but a female taken at Bagilo, Uluguru Mountains, 22 September, had an ovarian egg 15 mm., in diameter.

### Turacus fischeri (Reichenow)

*Corythaix fischeri* Reichenow, Orn. Centralbl., 1878, p. 88: Witu, Kenya Colony

2 ♂, Bungu, Usambara Mountains, Tanganyika Territory, September 1921.

[1] Ibis, 1928, p. 79.
[2] Journ. f. Ornith., 1921, pp. 211–215.
[3] Vög. Afr. **2**, 1903, p. 51.

This red-crested turaco is chiefly a coastal bird ranging from the northern part of Kenya Colony, south to Tanga and inland to the Usambara Mountains, and Unyamwesi, but not extending to the Uluguru range. In Kenya Colony it occurs at Rabai near Mombasa, at Witu and at Lamu. However, van Someren[1] does not record it in his very extensive collection, so the inference is that it is rare there. It is chiefly a bird of the northern coastal parts of Tanganyika Territory. Sclater[2] gives only an incomplete statement of its range, as Erlanger[3] collected two specimens on the lower Ganale River between Bardera and Umfudu, and two others at Woreda and Sololo, in Southern Ethiopia. Erlanger states that in that country it is by no means common.

Besides the two specimens listed above, I have examined thirteen others from the Usambara Mountains, seven of which are now in the Museum of Comparative Zoölogy,[4] the others in the American Museum of Natural History and the Philadelphia Academy. The series shows considerable variation in the extent of the reddish color on the occiput and nape, in the extent of the pure greenish on the interscapulars, and in the color of tail which varies from bluish-green to greenish-blue. The sexes are alike. The measurements are as follows: wing 163–176; tail 190–214; culmen from base 23–24 mm.

### Turacus hartlaubi (Fischer and Reichenow)

*Corythaix hartlaubi* Fischer and Reichenow, Journ. f. Ornith., 1884, p. 52: Mt. Meru, near Kilimanjaro.

1 ♂, 1 ♀, Ngong Forest, Nairobi, Kenya Colony, 14 July 1919. "Also Tumutumu." (A.L.)

Hartlaub's turaco is a bird of the highland forests of Kenya Colony and northern Tanganyika Territory. The species is quite variable and has been divided into a number of races (*crissalis, caeruleseens,* and *medius*) none of which are tenable. In Kenya Colony it is known from the following localities: Nairobi, Chuka, Nyeri, Embu, Gilgil (near), Mt. Kenya, Machakos, Narossura, Mau, Escarpement, Fort Smith, Kikuyu, Ssubugo Forest (Mau), Eldama Ravine, Burnt Forest, Elgon, Molo, Mt. Mbololo, Elgeyu, Mt. Uraguess, Kyambu, Londiani, and

[1] Nov. Zool., **29**, 1922.
[2] Syst. Avium Ethiop., pt. 1, 1924, p. 192.
[3] Journ. f. Ornith., 1905, p. 436.
[4] cf. Friedmann, Ibis, 1928, p. 79.

the Sotik Forest. In Tanganyika Territory it has been taken on the Usambara Mountains (Bumbuli, Phillipshof, and Lushoto), Mt. Kilimanjaro, Mt. Meru, Great Arusha, Sagayo, Mori River, and Marangu. It has not been found as yet in the Uluguru range.

### Gallirex porphyreolophus chlorochlamys Shelley

*Gallirex chlorochlamys* Shelley, Ibis, 1881, p. 118: Ugogo.

1 ♂, 1 ♀, Kilosa, Tanganyika Territory, 16 December 1920.

"Also Morogoro, Myombo, Kisanga, and Dombolo. Quite numerous in well-wooded patches in the Kilosa District." (A.L.)

This handsome bird is widely distributed over southern Kenya Colony, southwestern Uganda (Ankole), all of Tanganyika Territory, south through Nyasaland and Mozambique to the Zambesi River, south of which stream it is replaced by typical *porphyreolophus*. The latter has the breast and the interscapulars strongly flushed with rosy pink, while *chlorochlamys* has these parts greenish.

These two specimens agree with one from Kidunda, Tanganyika Territory, with which they have been compared.

### Ruwenzornis johnstoni kivuensis Neumann

*Ruwenzornis johnstoni kivuensis* Neumann, Bull. Brit. Orn. Cl., **21**, 29 Febr. 1908, p. 54: Western Kivu Volcanoes.

1 ♀, Ruanda Forest, Uganda, 28 September 1919.

"Soft parts: iris brown; bill Indian red; feet black." (A.L.)

This very well marked form differs from typical *johnstoni* in that it has the space around the eye and between the eye and the bill covered with small green feathers, while in the typical form of Mt. Ruwenzori, these areas are bare.

The present specimen constitutes the first record for this bird in British Ruanda. It is therefore all the more unfortunate that no definite locality record for it is available as Ruanda is a sizeable area, involving the Belgian Ruanda-Urundi mandated territory as well as southwestern Uganda.

Gyldenstolpe[1] writes that this plantain-eater, " . . . appears to be

[1] Kungl. Sv. Vet. Akad, Handlngr., 1924, pp. 255–256.

exclusively confined to the Birunga Mountains where it also seems to be rare . . . I have only come across these birds in a narrow valley on the southwestern slopes of the Mikeno Volcano . . . On the three eastern Volcanoes . . . Muhavura, Mgahinga, and Sabinio . . . I never came across them . . . " Sclater[1] gives the range of this bird as the volcanic region between Lakes Kivu and Edward. However, Sassi[2] records three specimens collected by Grauer in the forest west of Lake Tanganyika and comments on the fact that this seems to be a new locality record for the species. It follows then, that the range of this bird should read as follows: the mountain forests between Lakes Edward, Kivu, and the northwestern shore of Lake Tanganyika.

The single specimen collected has been compared with a male of typical *johnstoni*. The latter has the wings and tail more bluish, less violaceous, than the former. Also, as was pointed out by Gyldenstolpe[3] *kivucnsis* has almost no purplish tinge on the feathers of the upper nape, while in *johnstoni* this character is well marked.

In spite of his arguments in favor of his name, Reichenow's *chalcophthalmicus* must be relegated to the synonymy of *kivucnsis*.

### Musophaga violacea rossae Gould

*Musophaga rossae* Gould, Proc. Zool. Soc. Lond., 1851, p. 93: said to have come from the western coast of Africa, that is, Loanda (Grant, Ibis, 1915, p. 413).

1 ♂, 1 ♀, Mbugwe, Buddu, Uganda, 1 November 1919.
1 ♀, Chantwara, Bukoba, Uganda, 21 December 1922.

This bird is treated as a distinct species by Sclater,[4] but it is clearly nothing but a geographical representative of *violacea*.

The female from Mbugwe is in an advanced stage of the post-juvenal molt. The upperparts are practically as in the adult except that some of the brown juvenal feathers persist and show here and there among the violet-blue ones. This is particularly true of the nape, interscapulars, and rump, and to a lesser extent of the upper wing coverts. The underparts are mostly still clothed with dark brown juvenal feathers, but the chin, throat, and upper breast are largely bluish purple, as are also, but to a smaller degree, the flanks, thighs, and sides. The remiges

[1] Syst. Avium. Ethiop., pt. 1, 1924, p. 194.
[2] Ann. K. K. Naturhist. Hofmus. Wien, **26**, 1912, p. 375.
[3] cit. supra.
[4] Syst. Avium Ethiop., pt. 1, 1924, p. 195.

and rectrices are all new and fully grown, indicating that they are probably the first feathers to be replaced. The bill is much smaller than in adults and lacks the posterior enlargement that in older birds forms the frontal plate. In fact, the superior proximal margin of this

Young Musophaga violacea rossae to show condition of bill.

maxilla, far from being extended into a plate, is actually indented medially.

In the territory represented by the present collection, this plantain-eater is found throughout Uganda, Western Kenya Colony (East Elgon, Kakamega, Kaimosi and Kisii) and Northwestern Tanganyika Territory (Mori River, Shashi Hills, Urungi, and on the Uganda border at Bukoba). It is found both in euphorbia thickets and in

forested areas, but in Kenya Colony and Tanganyika Territory it appears to be nowhere common. Probably the only place in the latter country where it occurs in numbers (at least where several specimens have been obtained) is at Bukoba on the Uganda border. Grauer

Adult Musophaga violacae rossae to show condition of bill.

procured two birds there in December 1909[1] and Reichenow[2] likewise lists it from that locality.

Gyldenstolpe[3] writes that the size variation in this form is extensive.

[1] cf. Sassi, Ann. K. K. Naturhist. Hofmus. Wien, **26**, 1912, p. 375.
[2] Die Thierwelt Ost-Afrikas, **2**, Vögel, 1895, p. 101.
[3] Kungl. Sv. Vet. Akad. Handlngr., 1924, p. 256.

He finds that in seven adults from the Central African Lake district the wing varies from 220–235 mm. in the males, and from 210–241 mm., in the females. The variation in six adults that I have examined from Tanganyika Territory, Kenya Colony, Uganda, and the Belgian Congo are as follows: the wing measurements are 220–225 mm. in the males (2) and 217–231 mm. in the females (4).

No specimens of *M. v. savannicola* Grote have been available for study, so no opinion on this race can be offered.

### Corythaeola cristata yalensis (Mearns)

*Musophaga cristata yalensis* Mearns, Smiths. Misc. Coll. **65**, no. 13, 1915, p. 5: Yala River, Kavirondo, Kenya Colony.

1 ♂, 1 ♀, Kibosi, Ruanda, Uganda, 2 October 1919.

I have identified these two specimens as *yalensis* rather than *cristatus* chiefly because of the pale color of the chin and cheeks, but also, though with less certainty, on the basis of large size and paler, greenish blue upperparts. The size variations of this plantain-eater are probably of no subspecific significance, at least not without large series. I have examined thirteen adults, distributed as follows: Uganda 4; Cameroon 6; Gaboon 1; Libera 2. The measurements overlap very greatly as may be seen from the appended figures.

Uganda, 2 ♂: wing 314–328; tail 379–402; culmen 40–41 mm.
Uganda, 2 ♀: wing 300–323; tail 332–400; culmen 37.5–41 mm.
Cameroon 4 ♂: wing 318–325; tail 375–409; culmen 38–41.5 mm.
Cameroon 2 ♀; wing 297–300; tail 361–381; culmen 37.5–39 mm.
Gaboon —— : wing 325 ; tail 390 ; culmen 37.0 mm.
Liberia 2 ♀: wing 309–324; tail 372–397; culmen 41.5–42 mm.

Gyldenstolpe[1] has likewise found that the individual variation is very great, but that the majority of eastern birds are larger than western ones. Van Someren[2] also found *yalensis* to be recognizable, noting that the size difference between the two forms could, however, only be appreciated with a series.

In spite of the fact that Mearns had three specimens (type and two topotypes), that van Someren had examples from Mabira and Kyetume in Uganda and from the Yala River and Kakamega in Kenya Colony, and that Gyldenstolpe[3] mentions no less than 36 topotypical

[1] Kungl. Sv. Vet. Akad. Handlngr., 1924, pp. 257–258.
[2] Nov. Zool., **29**, 1922, p. 48.
[3] cit. supra.

specimens, Sclater[1] writes that *yalensis* is, " . . . only known from the type, of doubtful status."

The two specimens from British Ruanda are the westernmost records for *yalensis* and may be somewhat intermediate between that form and typical *cristatus*. Besides van Someren's two Uganda localities, the form is known from Kampala and Entebbe as well (specimens in the Museum of Comparative Zoölogy). Reichenow[2] writes that while *Corythaeola cristatus* has never been taken within the limits of Tanganyika Territory, it may be expected to occur in the vicinity of Bukoba. These two Ruanda individuals make this seem all the more likely and suggest that if the species does occur across the border, the Tanganyikan birds will probably be *yalensis*.

### Crinifer zonurus (Rüppell)

*Chizaerhis zonurus* Rüppell, N. Wirbelth., Vög. 1835, p. 9, pl. iv: Tembien Province, Ethiopia.

2 ♂, 1 ♀, Kome Island, Mwanza, Tanganyika Territory, 22 November 1922.

This species is said by Sclater[3] to occur from Bogosland, Sennar, and Ethiopia, south to the Bahr el Ghazal and Uganda. However, in 1895 Reichenow[4] recorded the bird in northwestern Tanganyika Territory (Bukoba and Kageyi) and also in 1903 (Vögel Afr., **2**, p. 32, where these localities are repeated); in 1908 Neumann[5] recorded specimens in Tring from Kavirondo and Lake Victoria, and in 1912 Sassi[6] records two collected by Grauer in Urundi, and states that this bird occurs as far south as the north end of Lake Tanganyika. The range of *zonurus* therefore must be extended through Uganda and adjacent parts of Kenya Colony (Kavirondo) south to the southern end of Lake Victoria (where, at Mwanza, Loveridge procured the present three specimens), and further west, through the Ruanda and Urundi districts to the northwest short of Lake Tanganyika. The present specimens constitute the southernmost definite records for the bird, but the extension of range involved is not great, as a bird from

[1] Syst. Avium Ethiop., pt. 1, 1924, p. 195.
[2] Die Thierwelt Ost-Afrikas, **2**, Vögel, 1895, p. 101.
[3] Syst. Avium Ethiop., pt. 1, 1924, p. 195.
[4] Thierwelt Ost-Afrikas, **2**, Vögel, 1895, pp. 101–102.
[5] Nov. Zool., **15**, p. 367.
[6] Ann. K. K. Naturhist. Hofmus. Wien, **26**, 1912, p. 375.

Ukerewe, Lake Victoria, has been in the Museum of Comparative Zoölogy for many years. It has no date, but appears to have been taken about 1908 and was received in exchange from the Berlin Museum about seven or eight years later.

The measurements of these three birds are as follows:

2 ♂: wing 252, 267; tail 270, 258; culmen from base 29.5, 29.5 mm
♀: wing 252; tail 264; culmen from base 32 mm.

### Corythaixoides leucogaster (Rüppell)

*Chizaerhis leucogaster* Rüppell, Mus. Senck., **3**, 1842, p. 127: S. Ethiopia.

1 ♂, 1 ♀, Dodoma, Tanganyika Territory, 5 December 1918.

"Also Longido, Morogoro, Mahaka." (A.L.)

Besides these specimens Loveridge collected an immature male and an immature female at Dodoma in June and July 1926 while with the Smithsonian-Chrysler Expedition. These two specimens are now in the United States National Museum. They have the outer tail feathers only partly grown, causing the tail to assume an externally graduated appearance and making the white band on the rectrices to seem medially acuminate (V shaped with the apex on the middle feathers). They have the throat and cheeks only sparsely feathered, but the crest is fully developed.

The female listed above has the bill greenish yellow, while the male has a black bill. On the whole, this difference holds between the two sexes, but Reichenow[1] thought it was purely individual in character. Neumann[2] was the first to definitely show that the bill color was sexual in character.

The white-bellied goaway-bird is widely distributed in the Acacia-Mimosa thornveld from Ugogo and Usagara, in Tanganyika Territory, north through Kenya Colony to Somaliland, the Hawash Region of Ethiopia and the Shoan lake district, to the Nile drainage area (Tarangole), but not extending into the Sudan. Reichenow[3] writes that in Tanganyika Territory this species does not appear to occur north of the Pangani River along the coastal areas.

[1] Vög. Afr., **2**, 1903, p. 33.
[2] Journ. f. Ornith., 1904, p. 378.
[3] Thierwelt Ost-Afr., **2**, Vögel, 1895, p. 102.

### Gymnoschizorhis leopoldi (Shelley)

*Schizorhis leopoldi* Shelley, Ibis, 1881, p. 117, pl. ii: Ugogo.

1 ♂, Morogoro, Tanganyika Territory, 7 July 1917.
1 ♀, Dodoma, Tanganyika Territory, 23 December 1918.
2 ♀, Ankole, Uganda, 7–10 October 1919.
1 ♂, 1 ♀, Sanga, Mwanza, Tanganyika Territory, 16 October 1922.

"Also Usurwe." (A.L.)

In 1908[1] Neumann separated the birds from Uganda, Belgian Congo, and western Tanganyika Territory, under the name *centralis* on the basis of darker upperparts and especially darker crests. A few months later[2] he wrote that a pair of birds from Simiyu River, southeast of Lake Victoria are intermediate between *leopoldi* and *centralis*. I have seen only two Uganda birds and no Congo ones, but the pair from Mwanza ought, on the basis of the Simiyu River birds, to be intermediate in character. However, I cannot see any difference between them and a series of twelve undoubtedly typical *leopoldi*. Furthermore, Gyldenstolpe,[3] Grant,[4] and Sassi[5] all write that they can find no constant difference between eastern and western birds. I therefore consider *centralis* as a synonym of *leopoldi*, with the mental reservation that I have actually seen but two *centralis* myself. Those two, from Ankole, have the crest slightly darker than any of the other fourteen birds, but the difference is very slight. The upperparts are no darker than those of eastern examples.

Van Someren, on the other hand[6] upholds Neumann's race.

The size variations may be judged by the following wing measurements:

males: 198–211 mm. (average 204.4 mm.)
females: 193–207 mm. (average 199.8 mm.)

The Ethiopian bird *personata* seems to be a distinct species, although many authors have considered *leopoldi* a race of *personata*.

This species occurs throughout eastern tropical Africa from the lake districts of the eastern Belgian Congo and Uganda south to the northern end of Lake Nyasa, and east throughout Tanganyika Terri-

[1] Bull. Brit. Orn. Cl., **21**, p. 95.
[2] Nov. Zool., **15**, 1908, p. 369.
[3] Kungl. Sv. Vet. Akad. Handlngr., 1924, p. 258.
[4] Ibis, 1915, p. 415.
[5] Ann. K. K. Naturhist. Hofmus. Wien, **26**, 1912, p. 376.
[6] Nov. Zool., **29**, 1922, p. 49.

tory. It is an inhabitant of the thorn-bush country and is often found in the same places with *Corythaixoides leucogaster*.

## Family CUCULIDAE. Cuckoos

### Cuculus canorus canorus Linnaeus

*Cuculus canorus* Linnaeus, Syst. Nat. 10th ed., 1758, p. 110: Europe; restricted type locality, Sweden (Hartert).

1 ♀, Morogoro, Tanganyika Territory, 12 February 1918.

The European cuckoo is a regular winter visitor in the regions covered by the present paper. In Tanganyika Territory it has been taken at Tanga, Arusha, Kakoma, Mamboia, and Morogoro.

The present specimen has the black bars on the underparts rather narrow, suggesting the Asiatic form *telephonus* which also winters in Africa to some extent. However, the bird is nearer to the typical form. No records of *telephonus* from Tanganyika Territory have come to my notice, but the race has been collected in the Anglo-Egyptian Sudan and in the eastern Belgian Congo (Semliki valley), and may therefore be expected to occur elsewhere as well. Stresemann[1] has recorded *Cuculus canorus bangsi* Oberholser, as wintering in Tanganyika Territory (Karema and South Ufipa, Msamvia River).

### Cuculus canorus gularis Stephens

*Cuculus gularis* Stephens, in Shaw's Gen'l. Zool., **9**, 1815, p. 83, pl. xvii: Camdeboo, Cape Province (ex Levaillant).

1 ♂, Zengeragusu, Mkalama, Tanganyika Territory, 2 November 1921.

This is the resident African form of the European cuckoo. The present specimen was in breeding condition when shot, the testes measuring 7 x 5 mm. The bird was heard calling "cuckoo" as in the European race but with rather a deeper tone. Apparently it is like its northern representative in its diet as its stomach contained a much comminuted mass comprized of many small hairs, suggesting hairy caterpillars.

Although this bird is widely distributed, it seems to be common nowhere. As far as I have been able to find, it has been taken at only two other localities in Tanganyika Territory—Kakoma and Karema; while in Kenya Colony it has been taken in several places.

[1] Orn. Monatsb., **36**, 1928, p. 19.

### Cuculus solitarius Stephens

*Cuculus solitarius* Stephens, in Shaw's Gen'l. Zool., **9**, 1815, p. 84, pl. xvii: Caffraria, that is, Eastern Cape Province (ex Levaillant).

1 ♀, Tumutumu, Kenya Colony, 27 November 1918.
1 ♀, Kilosa, Tanganyika Territory, 25 December 1920.
1 immature ♂ ?, Bagilo, Uluguru Mountains, Tanganyika Territory, 20 May 1922.
1 ♀, Kome Island, Mwanza, Tanganyika Territory, 24 November 1922.

"Common at Morogoro and Kilosa." (A.L.)

The Red-chested Cuckoo is widely distributed throughout the area under discussion, but is found chiefly in forests or in very dense, forest-like groves of Acacias. It does not normally occur in any numbers in more open country. It is found at sea level and as high as 8,500 feet.

### Cuculus clamosus clamosus Latham

*Cuculus clamosus* Latham, Genl. Syn. **2**, Suppl. 1802, p. xxx; Cape of Good Hope.

1 ♀, Ngong Forest, Nairobi, Kenya Colony, 26 July 1919.
1 ♂, Kilosa, Tanganyika Territory, 4 January 1921.

"The Kilosa bird was the only one seen in Tanganyika Territory." (A.L.)

This is the open savanna country counterpart of *C. solitarius*, but is very different from that bird in habits, voice, plumage sequence, and eggs, and is not to be considered a melanistic mutation of the red-chested species as has been suggested by Stresemann and others.

It is a wide ranging species, occurring in all parts of Uganda, Kenya Colony, Tanganyika Territory, and Mozambique, but is nowhere very numerous. It is very closely related to *C. gabonensis*.

I follow the recent conclusions of Grant and Mackworth-Praed[1] on the taxonomy of this cuckoo.

The male is not quite adult, having some of the fuscous brown feathers of immaturity present among the glossy black ones. The black feathers have a deep bluish gloss in the male, more greenish-blue in the female.

[1] Bull. Brit. Orn. Cl., **56**, 1936, p. 124.

### Clamator glandarius (Linnaeus)

*Cuculus glandarius* Linnaeus, Syst. Nat. 10th ed., 1758, p. 111: N. Africa and S. Europe.

1 ♂, Morogoro, Tanganyika Territory, 27 October 1917.

The great spotted cuckoo occurs throughout the East African tropics at all times of the year. Van Someren[1] states that the species breeds in Kanya Colony. It has been found breeding in Tanganyika Territory by Loveridge (at Unyanganyi, Turu). The presence of the birds throughout the year could also easily be accounted for by the wintering of European birds from October to March and of South African birds from March to October. Claude Grant's suggestion[2] that the European birds have two breeding seasons, one in southern Europe in June and July, and the other in South Africa in November and December, is wholly without foundation.

This specimen has the yellow color on the chin, throat, and sides of the neck very pale, but is otherwise normal.

### Clamator jacobinus jacobinus (Boddaert)

*Cuculus jacobinus* Boddaert, Tabl. Pl. Enlum. 1783, p. 53, no. 872: Coromandel coast of India (ex Daubenton).

1 ♀, Morogoro, Tanganyika Territory, 29 November 1918.
1 ♀, Tabora, Tanganyika Territory, 10 December 1918.
1 ♀, Kilosa, Tanganyika Territory, 31 December 1920.
1 ♂, Samumba, Tanganyika Territory, 25 February 1922.

Hartert[3] has separated the birds of tropical Africa from those of India, and revived the name *pica* Hemprich and Ehrenberg for the former. However, the difference between the two is so very slight (a small average size difference) and the overlapping so extensive that it seems better to consider them all one form. The breeding race of South Africa, *hypopinarus*, is fairly distinct, being grayer on the underparts, especially on the throat and breast. It occurs throughout East Africa during the southern winter (March to October), but, curiously enough, has not yet been recorded definitely from Tanganyika Terri-

[1] Nov. Zool., **29**, 1922, p. 51.
[2] Ibis, 1915, p. 416.
[3] Nov. Zool., **22**, 1915, pp. 253–254.

tory. It is known from Kenya Colony and from Ethiopia, and must pass through Tanganyika Territory as well. Probably a re-examination of the specimens of *C. jacobinus* from that country will reveal individuals of the southern form.

This species occurs throughout the Acacia-Mimosa bushveld of tropical Africa and is found from the coast to as high as 7,000 feet.

The Kilosa and Samumba birds are both in molting condition and are partly in immature and partly in adult plumage. The wing molt is peculiar in that while the innermost primary is new, the fifth (counting from the inside) and the next to the outermost are also new, while the intervening feathers are old. Of the three new ones, the next to the outermost appears to be the most recently grown; in fact, in the Samumba specimen the immature feather is still present although the fifth and the first are of the adult plumage. The tail molt is likewise unusual in that the middle and the outermost rectrices are new while the rest are old.

### Clamator cafer (Lichtenstein)

*Cuculus cafer*, A. Lichtenstein, Cat. rer. rar. Hamb., 1793, p. 14: Kaffirland, that is, Eastern Cape Province.

1 ♀, Morogoro, Tanganyika Territory, 10 December 1917.
1 ♂, Lumbo, Mozambique, 22 July 1922.

"Also Kilosa (♂) and Kabale, Ruanda, Uganda (3 ♂, 1 ♀). Called the 'rain bird' by the Wakami as it is said to cry loudly before rain." (A.L.)

In birds from South and East Africa the males are slightly darker above than the females, but in a pair from Cameroon no sexual difference is noticeable. A male from Ethiopia is intermediate in shade between those from Cameroon and East and South Africa. The females from three regions are alike and the difference between the males is rather slight.

The abundance, length, and width of the black streaks on the throat and breast are very variable, but entirely without regard to locality, sex, or age.

This cuckoo is widespread and resident in the region covered by this paper, but is nowhere common and appears to be quite local in its distribution, being present in spots far apart and absent in identical habitats in between.

Both birds are in full adult plumage.

### Chrysococcyx cupreus intermedius Hartlaub

*Chrysococcyx smaragdineus intermedius* Hartlaub, Orn. Westafr., 1857, p. 191: Gaboon.

1 adult ♂, 1 immature ♂, 1 immature ♀, Ngong Forest, Nairobi, Kenya Colony, 18–25 July 1919.

In identifying these specimens I have laid out the entire series in the Museum of Comparative Zoölogy (10 males and 6 females from South Africa, Kenya Colony, Uganda, and Cameroon), and find that the results attained by Bannerman[1] are corroborated. Birds of tropical East Africa are of the form *intermedius*, but considerable care is needed to distinguish them from "wintering" South African migrants —*sharpei*. The latter differ chiefly in the length of the tail (86–98 mm. in *sharpei*; 97–100 mm., in *intermedius*) and, in the female, in the barring on the underside, which is finer in *sharpei* than in *intermedius*.

The emerald cuckoo is a bird of the dense forests, and consequently has a very discontinuous distribution in tropical East Africa. It is known to occur as high as 6,000 feet in the mountain forests.

### Lampromorpha caprius (Boddaert)

*Cuculus caprius* Boddaert, Tabl. Pl. Enlum, 1783, p. 40, no. 657: Cape of Good Hope.

2 ♂, 1 ♀, Dar es Salaam, Tanganyika Territory, 5–10 February 1919.

"Also Kilosa, Kididimo and Mahaka." (A.L.)

One of the males is not fully adult but is molting into adult plumage. It still has the throat and breast spotted with brownish green and has the immature remiges and rectrices. Both sexes have the wing and tail feathers spotted with rufous, or white and rufous, in the immature plumage. In the adult stage these spots are pure white in the males, and rufous, or white and rufous, in the females.

The Senegal birds have been considered subspecifically distinct from those of the rest of Africa, and the name *chrysochlorus* has been applied to them. However, the characters (smaller size) do not hold well and the overlapping is very extensive. The recognition of two forms appears unwarranted as it tends to overemphasize small, inconstant differences.

[1] Nov. Zool., **29**, 1922, pp. 416–420.

The didric cuckoo is a common bird throughout the territory represented by the present collection. It occurs everywhere except in deep forest and arid, treeless country, from the coast to altitudes of as much as 5,500 feet. It is not known to occur on the high mountainous masses, such as Kilimanjaro, Kenya, etc., above the lower limits of the rain forest, the latter zone seeming to act as an ecological barrier. In the Ruwenzori it was found by Woosnam up to 3,400 feet.[1]

### Lampromorpha klaasi (Stephens)

*Cuculus klaasi* Stephens, in Shaw's Genl. Zool., **9**, 1815, p. 128: Platte river (ex Levaillant).

1 adult ♂, 1 adult ♀, Lumbo, Mozambique, 18 July 1918.
1 immature ♂, 1 immature ♀, Ngong Forest, Nairobi, Kenya Colony, 28 July 1919.
1 adult ♂, Kabale, Ruanda, Uganda, 20 September 1919.
2 adult ♂, Chantwara, Bukoba, Tanganyika Territory, 5–9 January 1923.

"Also Mombasa, Bungu, Dar es Salaam, Morogoro, Kilosa, and Mahaka." (A.L.)

This cuckoo, like the didric, is widely distributed throughout tropical East Africa. It is somewhat more inclined to live in forest areas (not very dense forest) and consequently is more local in its range. However, while occurring higher in the mountains than the didric it is found in the lowlands as well. Granvik[2] obtained *klaasi* at 7,000 feet on Mt. Elgon; Sjöstedt[3] procured it "high up in the cultivated zone," that is, about 6,000 feet on Kilimanjaro; and Carruthers[4] found it at 6,000 feet on Ruwenzori. Not only does *klaasi* replace *caprius* in the higher, more wooded areas in East Africa, but it largely takes its place in northeastern Africa, Ethiopia, Shoa, etc. However, the two species occur and breed in the same general localities in the lowlands so the two cannot be considered as ecological races. Furthermore Klaas's cuckoo is as nearly related to the emerald as to the didric cuckoo, as was pointed out by van Someren.[5]

[1] cf. Grant, Trans. Zool. Soc. Lond , **19**, 1910, pp. 424–425.
[2] Journ. f. Ornith., 1923, Sonderheft, p. 83.
[3] Kilimandjaro-Meru Exp., 1910, part 3, p. 86.
[4] cf. Grant, Trans. Zool. Soc. Lond., **19**, 1910, p. 425.
[5] Ibis, 1925, pp. 660–662.

### Centropus monachus monachus Rüppell

*Centropus monachus* Rüppell, N. Wirbelth., Vög. 1837, p. 57, pl. xxi, fig. 2: Kulla, n. Ethiopia.

1 ♂, Nairobi, Kenya Colony, 6 October 1915.
1 ♀, Nairobi, Kenya Colony, 21 October 1915.

The male is in juvenal plumage, but is fully grown in size. The female is adult, and has the inner secondaries rather dark olive brown like the western race *occidentalis*. It also has the tail feathers purplish brown instead of greenish, resembling in this respect the southern *cupreicaudus*.

This species occurs only in the northern part of the region under discussion in this paper—the Kikuyu district of Kenya Colony. The southern *cupreicaudus* is known from southern Nyasaland and may occur in adjacent parts of Mozambique, but has not been taken there as yet. It is a bird of dense thickets, edges of forests, etc., and, in Kenya Colony, the blue headed coucal is known only from Nairobi (probably the forest at Parklands), Kyambu, and Fort Hall.

### Centropus senegalensis fasciipygialis Reichenow

*Centropus fasciipygialis* Reichenow, Orn. Monatsb., **6**, 1898, p. 23: Quilimane, Mozambique.

1 ♂, Morogoro, Tanganyika Territory, 15 January 1918.

"Also at Dar es Salaam." (A.L.)

Van Someren[1] writes that a bird of the, " . . . *senegalensis* type is reported from Zanzibar (Kirk)," and a specimen is listed by Reichenow[2] as possibly *burchelli* or *fasciipygialis*. Probably because of the indefiniteness of this record, and the lack of others north of southern Tanganyika Territory (Mikindani and Lindi[3] and Maliwe, near Kilwa[4]) Sclater[5] states the range of *fasciipygialis* to be Beira and the valley of the lower Zambesi, north to southern Nyasaland and southern Tanganyika Territory. The present specimen therefore constitutes a considerable northward extension of the range of the race and renders more

[1] Nov. Zool., **29**, 1922, p. 50.
[2] Vög. Afr., **2**, 1903, p. 60.
[3] cf. Grote, Journ. f. Ornith., 1912, p. 521.
[4] Kothe, Zool. Ergebn, Exp. Hauptm. a. D. Fromm, 2, Aves, 1911, p. 351.
[5] Syst. Avium Ethiop., pt. 1, 1924, p. 186.

intelligible the Zanzibar record. At present Morogoro is the most northern locality for the bird. Owing to the absence of records other than those mentioned above, it is difficult to state much about the distribution and numerical status of the race, except that it is probably uncommon and local. I have not seen the Dar es Salaam bird so cannot say whether the identification was correct.

The Morogoro bird has many of the hackle-like, lanceolate feathers of the sides of the throat and breast margined with blackish as in *C. superciliosus*. Its measurements are as follows: wing 150; tail 179; culmen 27 mm.

### Centropus burchellii Swainson

*Centropus burchellii* Swainson, Anim. Menag., 1838, p. 321: South Africa (ex Burchell, Cape Province).

1 ♂, 1 ♀, Lumbo, Mozambique, 10 July 1918.

The species *Centropus senegalensis* and *Centropus burchellii* have been curiously confounded by students of African birds. To take two recent works for example, we find the following sorts of contradictory statements. Bannerman[1] writes that *C. burchellii* and *C. fasciipygialis* are not races of *C. senegalensis*, but that the first named is a distinct species, of which the second is a race. Both of them have very distinctly barred rumps and upper tail coverts, while in *senegalensis*, these feathers are unbarred. Sclater[2] considers them as forms of *senegalensis*, listing five races of that species, as follows:

1. *C. s. senegalensis:* Senegambia to n. Angola, east to Somaliland, the Upper Nile, and northern Uganda, skipping the equatorial forests.
2. *C. s. aegyptius:* Nubia and Egypt.
3. *C. s. fleeki:* Bechuanaland to the Upper Zambesi valley and Northern Rhodesia, east to Mashonaland, occasionally south to the Transvaal.
4. *C. s. burchellii:* Cape Province and Natal, north to the Transvaal and to Inhambane, Mozambique.
5. *C. s. fasciipygialis:* Beira and the Zambesi Valley, north to southern Tanganyika Territory and southern Nyasaland.

In connection with the writing of the present paper I have had the opportunity of investigating the taxonomy of these coucals, and find that neither Bannerman nor Sclater has completely arrived at the

[1] Rev. Zool. Africaine, **10**, fasc. 2, 1922, pp. 125–126.
[2] Syst. Avium Ethiop., pt. 1, 1924, p. 186.

correct conclusions. *C. fasciipygialis* is, as the latter decided, a race of *C. senegalensis*, but *C. burchellii* is a distinct species, as the former author thought. The solution of the problem resolved itself around the discovery that *C. burchellii* ranges much farther to the north than hitherto suspected, inhabiting the same general area as *C. senegalensis fasciipygalis*. The present specimens from Lumbo constitute the northernmost records for *C. burchellii* yet known.

Van Someren[1] lists eight specimens of *Centropus senegalensis flecki* from Lumbo, now in the Nairobi Museum. All of these were collected by Loveridge together with the present two and may well be *burchellii*. *C. burchellii* may easily be told from *flecki* by the barred upper tail coverts and rump, which are greenish, unbarred in *flecki*. *C. senegalensis fasciipygialis* is very similar to *C. burchellii*, and as it occurs together with it, may often be confused with the latter. The former is, however, much smaller (wing 145–155 mm.), has the top of the head earth-brown, the feathers with black shafts, has no light loreal spot, and has most of the narrow lanceolate feathers of the sides of the throat and breast edged with black as in *C. superciliosus*. It also has the basal barring on the rectrices more extensive distally than in *C. burchellii*.

### Centropus superciliosus superciliosus Hemprich and Ehrenberg

*Centropus superciliosus* Hemprich and Ehrenberg, Symb. Phys. fol. R., 1828, pl. xi: S. Arabia.

1 ♂, Nairobi, Kenya Colony, 8 November 1915.
1 ♀, Nairobi, Kenya Colony, 24 August 1920.

Van Someren[2] separated the birds of Kenya Colony and Uganda from the typical birds of northeastern Africa and southern Arabia on the basis of darker dorsal coloration and smaller size, and coined the name *intermedius* for them. The validity of this form has been seriously questioned, but for some years I felt it to be recognizable though admittedly a poorly marked form, and even took the trouble to rename it *furvus*[3] as van Someren's name was preoccupied by *Centropus sinensis intermedius* Hume. Years ago I examined van Someren's series and considered *furvus* valid, but the more extensive material seen since that time has reversed my opinion more and more definitely

[1] Nov. Zool., **29**, 1922, p. 50.
[2] Nov. Zool., **29**, 1922, p. 50.
[3] Auk, 1926, p. 370.

with each additional specimen. It is true that a good percentage of East African birds uphold the characters of the race, but they are merely intermediates between *superciliosus* and *loandae*, and very variable at that. In his list of the types of birds at Tring, Hartert[1] writes that van Someren's form requires confirmation. No confirmation seems to be forthcoming, however, and the name is to be considered a synonym of *superciliosus*.

Besides the two specimens listed above, Loveridge collected this species at Dar es Salaam, Morogoro, Kilosa, and Tabora, Tanganyika Territory. I have seen none of these specimens, which are now in the Coryndon Museum or elsewhere, but they probably are nearer to *superciliosus* than to *loandae*, although, on the whole, birds from Tanganyika Territory (especially the western parts) are fairly close to *loandae* Grant. A skull was also collected at Kilosa, 1 November 1921. The only Tanganyikan bird examined by me came from Mogagoni. It is intermediate between *superciliosus* and *loandae*, slightly more like the latter than the former.

This species is widely distributed in the region covered by the present report. In the Rufiji delta Schuster[2] found it breeding in late January (nest and eggs 30 January).

### Ceuthmochares aereus australis Sharpe

*Ceuthmochares australis* Sharpe, Proc. Zool. Soc. Lond. 1873, p. 609: Natal.

1 ♀, Morogoro, Tanganyika Territory, 24 July 1917.
1 ♂, Morogoro, Tanganyika Territory, 16 November 1917.

"Also Kilosa and Bungu." (A.L.)

The female taken on 24 June was in breeding condition, having large ovules in the ovary.

This race of the green coucal is the only one that occurs in Tanganyika Territory. It ranges from northeastern Uganda south through Kenya Colony (east of the Rift Valley) and Tanganyika Territory (known from Arusha, Moshi, Bungu and Amani in the Usambara Mountains, Pangani River, Nguru, Bagamoyo, Usaramo, Mkarazi in the Uluguru Mountains, Morogoro, Kilosa and Zanzibar; all of these localities being east of the Rift Valley) to Mozambique, Nyasaland, and Natal. Van Someren[3] writes that birds from Changamwe, Kenya

[1] Nov. Zool., **32**, 1925, p. 153.
[2] Journ. f. Ornith., 1926, p. 529.
[3] Nov. Zool., **29**, 1922, p. 50.

Colony, are much paler than South African specimens and may prove to be separable. Not having any birds from South Africa for comparison I cannot pass judgment as to the constancy and geographic nature of this variation.

### Ceuthmochares aereus intermedius Sharpe

*Ceuthmochares intermedius* Sharpe, Journ. Linn. Soc. Lond., Zool., **17**, 1884, p. 432: Semmio, Niam-Niam country.

1 ♀, Kayanda, Mawokota, Uganda, 20 August 1919.
1 ♂, 1 ♀, Kabare, Bukoba, Tanganyika Territory, 11 February 1923.

This race occurs from the Eastern Belgian Congo (upper Uele Valley), and Uganda east to Fort Ternan in Kenya Colony and northwestern Tanganyika Territory, not crossing the Rift Valley, to the east of which it is replaced by *australis*. In the lower Uele (Buta) this race is replaced by the darker, more bluish, typical form.

The Kabare male has the rectrices more bluish, less greenish than the two females listed above, but this difference is not a sexual one as a female from the Beni-Irumu forest, Ituri district, Belgian Congo, has the tail just as blue.

## Order PSITTACIFORMES

### Family PSITTACIDAE. Parrots, Macaws

### Psittacus erithacus erithacus Linnaeus

*Psittacus erithacus* Linnaeus, Syst. Nat. 10th ed., 1758, p. 99: Guinea.

1 ♂, Chantwara, Bukoba, Tanganyika Territory, 29 December 1922.

Hartert[1] separated Congo birds from those of West Africa on the character of larger bill size in the former and named them *megarhynchus*. Most workers have since concluded that *megarhynchus* is not distinct from typical *erithacus* and have synonymized the name. Gyldenstolpe[2] has recently resurrected Hartert's name for specimens from Uganda and the Eastern Belgian Congo, but states that the bill character is not reliable, but that the eastern birds are identifiable by their coloration which is considerably paler than that of Cameroon

[1] Kat. Vögel Senck. Mus., 1891, p. 157.
[2] Kungl. Sv. Vet. Akad. Handlngr., 1924, p. 282.

examples. If this be true, the Bukoba bird would have to be referred to *megarhynchus*. I have compared Loveridge's specimen with one from Uganda, two from Cameroon, and two from Gaboon, and find that the coloration is as unreliable as the length of the bill. The darkest bird of the series is the one from Bukoba, the next darkest, one from Metet, Cameroon, while the two lightest come from Cameroon and Gaboon, but the Uganda bird is almost as pale as either. The present small series indicates that eastern birds have, on the whole, longer bills than western specimens, as Hartert found in 1891, but inasmuch as the difference is not great and since Gyldenstolpe found this character to be variable, it seems more in accordance with the facts to consider eastern birds as identical with western ones. The bill measurements of the series examined are as follows (measured from the cere):

Bukoba, ♂, 37.5; Uganda, ♂, 36.0; Cameroon, 2 ♂, 32.5–36.0; Gaboon (Fernando Vaz), 2 ♂, 33.5–35.5 mm.

In East Africa the gray parrot is confined to the northern Kavirondo district (Nyarondo) of Kenya Colony, the forest areas of Uganda, the northwestern parts of Tanganyika Territory (Bukoba south through Ruanda and Urundi to Usumburu), and recorded by Loveridge[1] as occurring in Kitungulu forest, east of Kasanga, and southeast of Lake Tanganyika.

### Poicephalus robustus suahelicus Reichenow

*Poicephalus suahelicus* Reichenow, Journ. f. Ornith., 1898, p. 314: East Africa; type in the Berlin Museum from Mssua (Emin), near Bagamoyo, Tanganyika Territory.

1 ♂, Kimamba, Kilosa, Tanganyika Territory, 5 April 1923.

This specimen has the faintly reddish feathers of the forehead, cheeks, and chin margined with grayish, producing a clouded, subdued effect. With wear the tips disappear leaving the subterminal red color more conspicuous. Inasmuch as this bird is rather uncommon in collections, it may be worth while recording its measurements: wing 205; tail 94; culmen from the cere 43 mm. Reichenow[2] gives longer wing and shorter bill lengths—wing 210–230, bill (from cere) 38–39 mm.

According to Neumann's observations,[3] young birds lack the red feathers on the bend of the wing and the metacarpal edge and on the

[1] Bull. Mus. Comp. Zool., **75**, 1933, p. 169.
[2] Vög. Afr., **2**, 1893, p. 9.
[3] Nov. Zool., **15**, 1908, p. 380.

thighs. As red feathers are present in these areas, it follows that the present specimen is adult.

This parrot occurs in East Africa from the Zambesi Valley north to Kakoma, Kilosa, and Bagamoyo, Tanganyika Territory, but seems to be common nowhere. However, it may be more numerous than supposed as it appears to be active chiefly, if not only, early in the morning and later in the evening, and might therefore be overlooked very easily.

Grauer obtained four specimens in the forests west of Lake Tanganyika,[1] a record apparently overlooked by Selater,[2] and which seems to be the westernmost record for the race.

### Poicephalus gulielmi massaicus Fischer and Reichenow

*Poecephalus massaicus* Fischer and Reichenow, Journ. f. Ornith., 1884, p. 179: Meru Mountain, near Kilimanjaro, Tanganyika Territory.

"One was collected at Kijabe, Kenya Colony, in 1915 for the Nairobi Museum. There were very large flocks near the top of the mountains." (A.L.)

This specimen is not listed by van Someren[3] who records this parrot only from Burnt Forest, Elgeyu Forest, and Aberdare Mountains.

Recently[4] Neumann has described a race *permistus* from Eldama Ravine, and has considered birds from Kikuyu as intermediate between *massaicus* and *permistus*. The latter is said to be intermediate between *guglielmi* and *massaicus*.

### Poicephalus cryptoxanthus tanganyikae Bowen

*Poicephalus fuscicapillus tanganyikae* Bowen, Proc. Acad. Nat. Sci. Phila., **82**, 1930, p. 267: Kilosa, Tanganyika Territory.

1 ♂, 1 ♀, Morogoro, Tanganyika Territory, 23 August 1917.
1 ♂, 1 ♀, Lumbo, Mozambique, 15 July 1918.
2 ♂, Bungu, Usambara Mountains, Tanganyika Territory, September 1921.
1 ♀, Msimba, Ilonga, Tanganyika Territory, 27 March 1923.
1 ♂, 1 ♀, Kipera, Kilosa, Tanganyika Territory, 5 May 1923.
"Also Dar es Salaam and Tindiga." (A.L.)

One of the males from Bungu has a great deal of yellow on the wings,

[1] cf. Sassi, Ann. K. K. Naturhist. Hofmus. Wien, **26**, 1912, p. 362.
[2] Syst. Avium Ethiop., pt. 1, 1924, p. 199.
[3] Nov. Zool., **29**, 1922, p. 46.
[4] Journ. f. Ornith., 1931, p. 547.

head, back, breast, and abdomen; the yellow color is assymetrical in distribution. Otherwise, the specimen is normal like the rest. Sporadic xanthochroism is not at all uncommon in green birds such as parrots, but in this specimen the yellow has affected not only the green feathers, but also the third and fourth (from the outside) primaries of the left wing, feathers that are usually fuscous in color.

According to Neumann[1] specimens from the extreme southern part of the range (Zululand and eastern Transvaal) have slightly smaller bills than more northern birds, but birds from the Zambesi and Nyasa regions are intermediate. I have seen no South African material, but the pair from Lumbo, Mozambique, does not differ from Tanganyikan specimens. The former have bills 20 and 22.5 mm. long respectively; the latter, from 20–22.5 mm.

The brown-headed parrot occurs from southern Kenya Colony (Mombasa and Changamwe) south to Swaziland, Zululand, and the Southeastern Transvaal, chiefly along the coastal districts but also inland as far as Ugogo, Kilosa, etc., in Tanganyika Territory, and Zomba in Nyasaland.

Bowen[2] has recently reviewed the variations of this bird and recognizes three forms, as follows:

1. *P. c. zanzibaricus:* Zanzibar.
2. *P. c. cryptoxanthus:* Natal, north through the Transvaal and southern Mozambique to southern Nyasaland.
3. *P. c. tanganyikae:* coastal area from northern Mozambique to a little north of Mombasa.

The Zanzibar race has a dark brown head and bluish green rump and underparts, and is large (wing ♂ 173, ♀ 165 mm.); *cryptoxanthus* has the head paler brown and the rump slightly more yellowish green, wings (♀) 150–154 mm. Finally, *tanganyikae* is paler, more olivaceous, on the head than either of the other two, and the underparts more yellowish green, wings, ♂, 148–159; ♀, 145-152 mm.

### Poicephalus meyeri matschiei Neumann

*Poicephalus matschiei* Neumann, Journ. f. Ornith., 1898, p. 501: Ugogo, Tanganyika Territory.

1 ♂, 1 ♀, Ulugu, Ushora, Tanganyika Territory, 7 November 1921.
1 ♂, 1 ♀, Mbala, Kilosa, Tanganyika Territory, 27 February 1923.
"Also Kongwa, Mahaka, Usurwe, and Sagayo." (A.L.)

[1] Nov. Zool., **15**, 1908, p. 385.
[2] Proc. Acad. Nat. Sci. Phila., **82**, 1930, pp. 267–268 and Auk, **49**, 1932, p. 86.

In studying the races of this parrot I have examined a series of 28 birds representing the following races—*meyeri* 2; *matschiei* 5; *saturatus* 11; *transvaalensis* 5; *reichenowi* 5. I find that the conclusions reached by Claude Grant[1] and by Sclater[2] are correct. Van Someren[3] has separated the Uganda birds (*saturatus*) from those of Kavirondo, Kakamega, and Fort Ternan, using for these the name *virescens*. Unfortunately *virescens* is a pure synonym of *erythreae*, which in turn is identical with *meyeri*, so that even if Kavirondo birds were distinct from *saturatus*, the name *virescens* could not be applied to them. The same is true of *nyansae* Neumann, which, based on a bird from Unyoro, Uganda, is a straight synonym of *saturatus*. Either Kavirondo birds should be lumped with those of Uganda under the name *saturatus* or they should be given a new name. As far as I can determine, the birds from Kavirondo and Kakamega south to the Ikoma district, Tanganyika Territory, are intermediate between *matschiei* and *saturatus*, but nearer to the latter. There is no need to name still another race of this variable species, as the form is merely an aggregate of integrades in an area between that of two fairly well marked forms.

The present race inhabits most of Tanganyika Territory except the vicinity of Lake Victoria, to the east of which it intergrades with *saturatus* which form also occurs in Ruanda and Urundi.

This is the bluest of the eastern races of *P. meyeri*, bridging the gap between the western *reichenowi* and *neavei* on the one hand, and the eastern *meyeri* and *saturatus* on the other.

The young birds are greener, less bluish below than adults, a character that must always be considered in identifying these parrots subspecifically. Young birds also lack the yellow on the crown (which is present in adults of all forms except *reichenowi*).

### Poicephalus meyeri saturatus Sharpe

*Paeocephalus saturatus* Sharpe, Bull. Brit. Orn. Cl., **11**, 1901, p. 67: n. Ankole.

1 ♂, 1 ♀, Kibosi, Ruanda, Uganda, 4–21 October 1919.
1 ♂, Buchosa, Bukoba, Tanganyika Territory, 1 December 1922.

The male from Bukoba was identified by either Dr. Hartert or Mr. Goodson as *neavei*, and indeed, it agrees quite well with the description of that race, although coming from a locality so distant from the range

[1] Ibis, 1915, p. 259.
[2] Syst. Avium Ethiop., pt. 1, 1924, pp. 201–202.
[3] Nov. Zool., **29**, 1922, p. 47.

of *neavei*. However, it seems better to consider it as an extreme individual variation of *saturatus*. Sassi[1] lists birds collected at Bukoba by Grauer as *saturatus*.

Strangely enough, Granvik[2] records a similar case from Mt. Elgon. He collected six specimens. " . . . Among the 6 birds there are two which at first sight could hardly be placed under *P. m. saturatus* for they most closely agree with the sub-species *Poicephalus meyeri neavei*, described by Grant, the feathers of the upper rump and breast in these birds being distinctly blue, but in other respects they entirely resemble the preceding sub-species . . . But after comparing these two specimens with the large series, found at the Berlin Museum, Prof. O. Neumann, who very kindly examined them closely, and myself came to the conclusion that they must undoubtedly be placed under *P. m. saturatus* . . ."

Sclater[3] gives the range of *saturatus* as Uganda and Ruwenzori to the inland parts of Kenya colony. To this should be added Ruanda and Urundi and, east of Lake Victoria, the Ikoma district of Tanganyika Territory, where Chapin obtained two specimens which agree with others from Kakamega and Uganda. As already mentioned, the Kavirondo and Ikoma birds are somewhat intermediate between typical *saturatus* and *matschiei*.

Van Someren[4] records this species from Mt. Kenya as a possible new subspecies. The nearest locality from which I have seen a specimen is the Uasin Gishu plateau. This bird is *saturatus*.

### Agapornis pullaria ugandae Neumann

*Agapornis pullaria ugandae* Neumann, Nov. Zool., **15**, 1908, p. 388: Entebbe, Uganda.

2 ♂, 1 ♀, Kome Island, Mwanza, Tanganyika Territory, 22 November 1922.

Before the present specimens were collected, the species was known from but two localities in Tanganyika Territory—Karagwe, where Trotha obtained it, and Ikuru Island in Victoria Nyanza. Reichenow mentions only the latter in his Vögel Ost-Afrikas," 1895, p. 101, while he records only the former in his Vögel Afrikas, **2**, p. 22.

[1] Ann. K. K. Naturhist. Hofmus. Wien, **26**, 1912, p. 363.
[2] Journ. f. Ornith., 1923, Sonderheft, p. 73.
[3] Syst. Avium Ethiop., pt. 1, 1924, p. 202.
[4] Nov. Zool., **29**, 1922, p. 47.

Neumann[1] separated the eastern birds from western ones on the basis of lighter blue rump color in the former. O.-Grant[2] does not recognize *ugandae* and calls Ruwenzori birds *pullaria.* Likewise Sassi[3] records specimens from Kissaka, Kasindi, Beni, and Bukoba as *pullaria.* I have examined specimens from Beni, the Semliki Valley, and Entebbe besides the present three and find the racial characters hold. Of typical *pullaria* I have seen eight birds from Cameroon and three without locality.

The Bukoba bird[4] may be another Tanganyikan record, but it seems more probable that it was taken on the Uganda side of the border. At any rate, the range as given by Neumann and copied by Sclater[5] should be extended southward from Uganda and Ruwenzori to include Ruanda, Urundi, and the south end of Lake Victoria.

The three females from Lake Urigi, Karagwe, recorded by Neumann[6] collected by Grauer, show that Trotha's record is not exceptional and that the bird is probably fairly common in northwestern Tanganyika Territory. Van Someren[7] records *ugandae* from Nyarondo, in Kenya Colony. He also writes that the Uganda and East African specimens are *ugandae* while Masindi ones, western *A. p. pullaria.* Hartert[8] notes that the Masindi specimens given by van Someren to the Tring Museum are *A. p. ugandae.*

### Agapornis fischeri Reichenow

*Agapornis fischeri* Reichenow, Journ. f. Ornith., 1887, p. 54: Usure, (*i.e.* Usurwe) Tanganyika Territory.

1 ♂, 1 ♀, Isuna, Singida, Tanganyika Territory, 28 February 1922.
1 ♀, Kome Island, Mwanza, Tanganyika Territory, 22 November 1922.

> "Also Sanga. Great flocks were seen in the ma ze fields at Nduguyu River, where their flights and manner of feeding in the stubble reminded one of the hordes of weavers. At Suna they roosted in the bussu palms; the natives said they nest in them also." (A.L.)

This lovebird occurs only in Tanganyika Territory, where it is found in the country to the south and east of Lake Victoria; south as far as

[1] Nov. Zool., **15**, 1908, p. 388.
[2] Trans. Zool. Soc. Lond., **19**, 1910, p. 439.
[3] Ann. K. K. Naturhist. Hofmus., **26**, 1912, p. 364.
[4] Grauer coll., cf. Sassi cit. supra.
[5] Syst. Avium Ethiop., pt. 1, 1924, p. 204.
[6] loc. cit.
[7] Nov. Zool., **29**, 1922, p. 48.
[8] Nov. Zool., **31**, 1924, p. 127.

the Unyamwesi and Wembere country and east as far as the northwestern outliers of the Kilimanjaro foothills.

The male has the crown and occiput somewhat darker than either of the two females, and the rump brighter violet-blue. Otherwise the sexes are alike.

### Agapornis personata Reichenow

*Agapornis personata* Reichenow, Journ. f. Ornith., 1887, p. 55, Serian, Tanganyika Territory.

1 ♂, 1 ♀, Kongwa, Tanganyika Territory, 24 April 1917.

"Also Konzigwe, Mahaka, and Suna." (A.L.)

Besides these birds, Loveridge collected a female at Dodoma on 23 June 1926, while with the Smithsonian-Chrysler Expedition. This specimen which is now in the United States National Museum is similar to the Kongwa female, but darker on the head, and has slightly longer bill and wings.

The male is darker on the head, back, and lower abdomen than the female and has a deeper reddish bill, that of the female having more of an orange-scarlet color.

The yellow-collared lovebird occurs from Northern Tanganyika Territory (Lake Manyara, the Southern Masai steppe country, and the Kilimanjaro district) south to the Ukonongo, Usango, Uhehe, and Uranga districts. It crosses the border into Kenya Colony only in the Kilimanjaro region as far as known. In that area van Someren[1] observed it at Taveta, some twenty-five miles to the east of the mountain. However, it is uncommon there as I never saw any during a stay of two months in the Taveta district.

Loveridge found this lovebird nesting in holes in a baobab tree at Kongwa on 26 April 1917.

## Order STRIGIFORMES

### Family TYTONIDAE. Barn Owls

### Tyto alba affinis (Blyth)

*Strix affinis* Blyth, Ibis, 1862, p. 388: Cape of Good Hope.

1 ♂, 1 ♀, Kilosa, Tanganyika Territory, 20–23 May 1921.

"Also seen at Morogoro." (A.L.)

[1] Nov. Zool., **29**, 1922, p. 48.

Claude Grant[1] writes that the African race of the barn owl is a very distinct form. Sclater[2] regards it as " . . . possibly a distinguishable form." I have not enough material of *affinis* to decide on its merits, but the amount of buffy on the underparts and of dark gray above certainly does not mean very much as the birds vary greatly. The male listed above is nearly white enough below to pass for typical *alba*, but is spotted.

The barn owl occurs throughout our region, but is nowhere numerous. However, it is not scarcer there than barn owls are in most places. According to Grote[3] it breeds in early June in southeastern Tanganyika Territory (Mikindani).

## Family STRIGIDAE. Owls

### Asio helvola helvola (Lichtenstein)

*Strix* (*Brachyotus*) *helvola* Lichtenstein, Verz. Samml. Säugeth. u. Vög. Kaffernl., 1842, p. 11: "Liqua-Fluss," Cape Province.

1 ♀, Sagayo, Mwanza, Tanganyika Territory, 1 November 1922.

"On the same afternoon (1 November 1922) a dozen of these owls were flushed from breast-high grass." (A.L.)

The African marsh owl is found in swampy places and fairly tall grass throughout eastern Africa from Ethiopia south to the Union of South Africa.

There seems to be a tendency for this form to become lighter in the northern and darker in the southern part of its range, but the extremes are not widely divergent.

### Strix woodfordii nigricantia (Sharpe)

*Syrnium nigricantius* Sharpe, Bull. Brit. Orn. Cl., **6**, 1897, p. xlvii: Mpwapwa, Tanganyika Territory.

1 ♀, Ngong Forest near Nairobi, Kenya Colony, 16 October 1920.

This specimen was in breeding condition when shot.

*Strix woodfordii suahelica* is a synonym. The present specimen is very dark above, agreeing with the description of *nigricantia*, but comes

[1] Ibis, 1915, p. 258.
[2] Syst. Avium Ethiop., pt. 1, 1924, p. 237.
[3] Journ. f. Ornith., 1912, p. 520.

from the range of *suahelica.* Furthermore, van Someren[1] writes that his series of twelve specimens from Kenya and Uganda show every gradation from bright golden brown to deep blackish brown, and can be matched with specimens in Tring, " . . . which have been placed as *S. w. nuchale, bohndorffi, suahelicum,* and *nigricantius.*" It seems quite certain from the series (unfortunately small) that I have studied that *nigricantia* and *suahelica* are merely color phases of the same thing. Van Someren suggests this without actually saying so, but uses the name *suahelica,* which is antedated by one year by *nigricantia.* Claude Grant[2] went even farther in concluding that no valid subspecies can be maintained as the differences seem to be merely individual variations, there being at least three phases, a blackish, a cinnamon, and a grayish one. Van Someren[3] states that young birds show color phases that are not geographic; one of his birds is grayish buff, two others are sandy buff, while a third is very dark brown.

The dimorphism of this species is further complicated by the fact that darkness of color appears to increase with age in all phases.

*Syrnium sansibaricum* Reichenow[4] is also a synonym of *nigricantia.*

October seems to be the breeding season throughout Tanganyika Territory as well as Kenya Colony. Grote[5] found eggs on 16 October at Lindi and at Mikindani.

This owl occurs throughout the territory under discussion but is restricted to dense bush and forested areas, so that it is rather local, and its distribution discontinuous.

### Otus senegalensis graueri Chapin

*Otus senegalensis graueri* Chapin, Am. Mus. Novit.; no. 412, 1930, p. 4: Lueba, northwest shore Lake Tanganyika.

1 ♀, Morogoro, Tanganyika Territory, 12 December 1917.
1 ♂, Mkata River, Kimbwabwa's, Tanganyika Territory, 27 August 1921.

"The outline and colouring of the male so blended with the bare thorn tree on which it was sitting in bright sunlight, that it appeared to be a broken off branch, so that I had the greatest difficulty in seeing it when pointed out by my collector." (A.L.)

[1] Nov. Zool., **29**, 1922, p. 45.
[2] Ibis, 1915, p. 255.
[3] *loc. cit.*
[4] in Werther's Die Mittl. Hochl. des nördl. Deutsch-Ost-Afr. 1898, p. 272: Zanzibar.
[5] Journ. f. Ornith., 1912, p. 520.

The female is darker and more rufous than the male.

The measurements of the two are as follows: male wing 118, tail 51, culmen from cere 11.5 mm.; female wing 119, tail 52, culmen from cere 11.0 mm.

On the whole this owl seems to be less dichromatic than most, and consequently color characters are somewhat more reliable.

Chapin[1] writes that *graueri* may be expected to be found in the interior of Tanganyika Territory. "A female collected by Loveridge at Morogoro . . . is very similar in color to specimens of *graueri* from near the type locality, but its wing measures only 119 mm. Other specimens from Tanganyika Territory are grayer."

### Otus leucotis granti (Kollibay)

*Pisorhina leucotis granti* Kollibay, Orn. Monatsb., **18**, 1910, p. 148: Southwest Africa.

1 ♀, Morogoro, Tanganyika Territory, 9 July 1917.
1 ♂, 1 ♀, Mtali's near Mkalama, Tanganyika Territory, 19 October 1921.

Besides the above three specimens, Loveridge collected a female at Dodoma, Tanganyika Territory, on 3 July 1926 while with the Smithsonian-Chrysler Expedition. This specimen (now in the United States National Museum) agrees with the other females but is slightly lighter in color.

The range of this form as given by Sclater[2] is too restricted. He writes, " . . . South Africa, north to Angola and Nyasaland," but it really extends north to north-central Tanganyika Territory. Just where it meets or intergrades with typical *leucotis* is not known. However, the Mtali male is darker, especially on the upper throat and the crown than another from South Africa, and may therefore be considered as somewhat intermediate in nature. In the character of the barring of the primaries it is like the South African bird.

The two females vary in color, the Mtali specimen being noticeably darker than that from Morogoro.

[1] *loc. cit.*
[2] Syst. Avium Ethiop., pt. 1, 1924, p. 242.

### Glaucidium perlatum (Vieillot)

*Strix perlata* Vieillot, N. Dict. d'Hist. Nat. **7**, 1817, p. 26: Senegal.

1 ♂, Dar es Salaam, Tanganyika Territory, 18 November 1918.
1 ♀, Mahaka, Dodoma, Tanganyika Territory, 1 April 1922.
1 ♀, Kinyambwa, Dodoma, Tanganyika Territory, 7 April 1922.
"Also Kilosa." (A.L.)

The material of this species examined (12 specimens) is not sufficient to enable me to attempt a subspecific study of this owl, particularly inasmuch as Claude Grant[1] and Sclater and Mackworth-Praed[2] were unable to recognize any races with a series six times as great as mine. Van Someren, on the other hand,[3] suggests that there are two if not three races, but I cannot follow his argument. He states that there is a western form and an eastern one, but that East African birds are intermediate!

All three specimens have the crown spotted with white, but I have seen some individuals in which the spotting was confined to the forehead, apparently an individual variation not correlated with sex, age, season, or geography.

This owl is generally distributed throughout our region.

The Kinyambwa bird is molting the rectrices.

### Glaucidium capense scheffleri Neumann

*Glaucidium capense scheffleri* Neumann, Orn. Monatsb., **19**, 1911, p. 184: Kibwezi, Kenya Colony.

1 ♂, Kilosa, Tanganyika Territory, 18 January 1921.
1 ♀, Wami River, Tanganyika Territory, 3 September 1921.
"Also a male at Kipera. The call of this owl at sunset or dusk is a very characteristic bush sound in the Kilosa district." (A.L.)

These specimens appear to be the westernmost ever taken in Tanganyika Territory, as birds from Kakoma, Marunge, Mkigwa, and the Unyamwesi country generally are typical *capense*. The present race has heretofore been known only from Northeastern Tanganyika and Southern Kenya Colony (the Pangani River to Ukamba). It differs from typical *capense* in having a deeper and purer

[1] Ibis, 1915, p. 256.
[2] ibid., 1919, pp. 681–682.
[3] Nov. Zool., **29**, 1922, p. 46.

brown color, in having the light bars on the back absent or only poorly developed, and in having the color of the occiput separated from that of the back by an area of yellowish and dark brown bars.

The measurements of the two birds listed above are:

♂, wing 137, tail 83, culmen from cere 13 mm.
♀, wing 137, tail 83.5, culmen from cere 12.5 mm.

### Bubo africanus africanus (Temminck)

*Strix africana* Temminck, Pl. Col. livr. 9, 1823, pl. L: Cape of Good Hope.

1 ♂, 1 ♀, Morogoro, Tanganyika Territory, 9 June 1917.
1 ♂, Lumbo, Mozambique, 3 September 1918.
"Also one from Kilosa where it was very abundant." (A.L.)

The male from Lumbo and the female from Morogoro are of the brownish phase while the male from Morogoro is grayish, but even the latter is more brownish than *cinerascens* of farther north.

Claude Grant[1] writes that *Asio maculosus amerimnus* (not *americanus* as he misquotes it) of Oberholser appears to be a synonym of *Bubo africanus cinerascens*, but if the original description of *amerimnus* be examined, it will be found that the bird in question is *africanus* and not *cinerascens*, as the type came from Natal, South Africa. The Kilimanjaro specimen listed by Oberholser is not the type as Claude Grant appears to feel. Furthermore, *africanus* occurs as far north as Nairobi and Nakuru in Kenya Colony, so the Kilimanjaro birds must belong to this race.

This owl is widely distributed throughout the region under discussion.

### Bubo lacteus (Temminck)

*Strix lactea* Temminck, Pl. Col. livr. i, 1824, p. 4: Senegal.

1 ♀, Kilosa, Tanganyika Territory, 14 April 1921.
"Also a female from Tindiga. Seen at Kilimatinde. It is not uncommon in the Kilosa district." (A.L.)

The specimen listed above is an adult in fresh plumage.

Verreaux's eagle-owl occurs throughout the region under discussion but appears to be numerous nowhere. It does not stray far from trees, usually fairly large ones with rather dense foliage, in the shade of which it passes most of the daytime.

[1] Ibis, 1915, p. 252.

# Order CAPRIMULGIFORMES

## Family CAPRIMULGIDAE. Goatsuckers

### Caprimulgus europaeus meridionalis Hartert

*Caprimulgus europaeus meridionalis* Hartert, Ibis, 1896, p. 370: Greece (*vide* Vög. pal. Fauna, p. 848).

1 ♂, Kilosa, Tanganyika Territory, 4 February 1921.
1 ♀, Suna, Singida, Tanganyika Territory, 27 February 1922.

Meinertzhagen has reviewed the subspecies of this nightjar in detail[1] and I find his conclusions are supported by the material in the Museum of Comparative Zoölogy. *Meridionalis* differs from typical *europaeus* chiefly in size (the wing length of adult males being 189–204 in *europaeus* and 174–189 mm. in *meridionalis*), and while the present male is rather large (wing 188 mm.) yet it is clearly referable to the Mediterranean subspecies. It has no white mark on the outer web of the next to the outermost primary and neither does the female, although not infrequently such a mark is present in this form.

Both birds are in fresh plumage, but the outermost primaries are only partly grown and still enclosed in their sheaths for at least half their length.

This race does not appear to migrate as far to the south in winter as either the typical form or the central Asian one, *unwini*.

According to Sclater,[2] this subspecies is not known from south of the Pangani River in Tanganyika Territory, so the present records constitute new southern limits.

### Caprimulgus europaeus unwini Hume

*Caprimulgus unwini* Hume, Ibis, 1871, p. 406: Agrore valley, Hazara district, n. w. India.

1 ♂, Morogoro, Tanganyika Territory, 24 September 1917.

This specimen appears to be *unwini* but I am not entirely certain as I have seen almost no comparative material of this race. It fits the description given by Hartert[3] and has a wing length of 196 mm.

As far as I have been able to ascertain, this is the first time this bird

[1] Ibis, 1922, pp. 43–48.
[2] Syst. Avium Ethiop., pt. 1, 1924, p. 248.
[3] Vög. pal. Fauna, **7**, 1912, p. 849.

has been taken in Tanganyika Territory, although van Someren[1] has listed it from as nearby in Kenya Colony as Tsavo and Mombasa. It has also been taken in Natal.

This example is in fairly worn plumage, a fact, which, taken into consideration with the date of its capture, indicates that in this bird the postnuptial molt occurs after the migration and not before it.

### Caprimulgus fossei fossei Hartlaub

*Caprimulgus fossei* Hartlaub, Orn. Westafr., 1857, p. 23: Gaboon.

1 ♂, Lumbo, Mozambique, 15 August 1918.

A second specimen collected at Lumbo was referred to *C. fossei mosambiquus* by van Someren[2] but I cannot see that *mosambiquus* differs constantly in any way from typical *fossei*. The present example is really more or less intermediate between *fossei* and *clarus*, which latter I consider a race of the former, and not a distinct species as does van Someren.

In East Africa this race is chiefly coastal in its distribution, its range extending northward even as far as Zanzibar, but usually stopping at about Mikindani. The limits of its range inland and those of *clarus* are not yet known.

Bowen[3] considers *mosambiquus* as distinct from *fossei*, which latter race he restricts to Gaboon. I am not convinced that the two are really separable.

### Caprimulgus fossei clarus Reichenow

*Caprimulgus clarus* Reichenow, Journ. f. Ornith., 1892, p. 29: Bukoba, Lake Victoria.

1 ♀, Morogoro, Tanganyika Territory, 23 August 1917.
1 ♀, Mombasa, Kenya Colony, 31 May 1918.
1 ♂, 1 ♀, Dar es Salaam, Tanganyika Territory, 7 June 1918.

"Also Kilosa, Tanganyika Territory." (A.L.)

Sclater[4] gives the range of *clarus* as the, " . . . coastal districts of Kenya Colony inland to the eastern shores of Victoria Nyanza," but the type locality is on the western shore of Lake Victoria and van

[1] Nov. Zool., **29**, 1922, p. 84.
[2] Nov. Zool., **29**, 1922, p. 86.
[3] Proc. Acad. Nat. Sci. Phil., **83**, 1931, pp. 40–42.
[4] Syst. Avium Ethiop., pt. 1, 1924, p. 253.

Someren[1] records the bird from Jinja, Kampala, and Bugoma, in Uganda. The range should be further extended to include the inland parts of the northern half of Tanganyika Territory (Morogoro, Kilosa, to north end of Lake Tanganyika). Another Morogoro bird was referred to *C. fossei mosambiquus* by van Someren[2] but is really *clarus*.

Sjöstedt[3] lists a specimen of *apatelius* from Mt. Kilimanjaro (based on Neumann's statement[4]) but this is undoubtedly a mistake and should be referred to *clarus*.

Van Someren[5] has come to this conclusion.

### Cosmetornis vexillarius (Gould)

*Semeiophorus vexillarius* Gould, Icon. Av. pt. **2**, pl. iii, 1838: Sierra Leone.

1 ♂, Kilosa, Tanganyika Territory, 3 January 1921.

> "While sitting up in a tree one night waiting for a leopard at Mbweni, I enjoyed the interesting spectacle of seeing some three or four of these nightjars flying beneath me. The birds themselves were almost, if not entirely, invisible, but their white pennants were floating and flickering about in the gloom, in quite an uncanny manner." (A.L.)

The single specimen collected is an adult male in full breeding plumage with very long "pennants." Chapin[6] has discussed the breeding season and the migrations of this remarkable goatsucker, and has found that the species does not nest north of the equator, but migrates as far as the southern Sudan (March to July inclusive). The breeding and non-breeding ranges appear to overlap, or at least to meet, in northern Tanganyika Territory, so it appears likely that this bird is more or less of a permanent resident in that part of our area. The present bird from Kilosa is of interest in that it seems to be the northeasternmost breeding locality record, the nearest one to it indicated on Chapin's map being Iringa, about 100 miles to the southwest of it.

[1] Nov. Zool., **29**, 1922, p. 86.
[2] cit. supra.
[3] Kilimanjaro-Meru Exp., 1910, p. 102.
[4] Orn. Montsb., **12**, 1904, p. 143.
[5] loc. cit.
[6] Bull. Amer. Mus. Nat. Hist., **35**, 1916, pp. 73–81.

# Order MICROPODIFORMES

## Family MICROPODIDAE. Swifts

### Micropus affinis abessynicus (Streubel)

*Cypselus abessynicus* Streubel, Isis, 1848, col. 354: Abyssinia.

1 ♂, 1 ♀, Mombasa, Kenya Colony, 20 May 1918.
1 ♀, Kilosa, Tanganyika Territory, 5 May 1922.

"Also Morogoro." (A.L.)

The female from Kilosa was in breeding condition when collected. It has the white throat patch smaller than in the Mombasa female; similar to the Mombasa male. The Kilosa bird is also smaller than either of those from Mombasa. The former has a wing length of 124.5 mm., while the latter measure 130 (♂) and 128.5 mm. (♀), respectively.

This swift is found throughout the region under discussion, but appears to be more or less uncommon throughout much of its range.

### Cypsiurus parvus myochrous (Reichenow)

*Cypselus myochrous* Reichenow, Journ. f. Ornith., 1886, p. 116: Karema, Tanganyika Territory.

1 adult ♀, Morogoro, Tanganyika Territory, 17 July 1917.
1 immature ♀, Dar es Salaam, Tanganyika Territory, 10 January 1919.

"Also Kilosa." (A.L.)

The immature bird has the upper wing coverts, scapulars, and feathers of the back and rump edged with rusty rufous, and has no whitish on the upper throat as in adult birds.

The palm swift is widely distributed throughout eastern Africa, but as far as known, does not breed in any but palm trees, so that its breeding range is necessarily rather discontinuous or "spotty."

Loveridge's notes on the curious nesting habits of the palm swift have been published fully in the Memoirs and Proceedings of the Manchester Literary and Philosophical Society, 61, 1919, part 2.

# Order COLIIFORMES

## Family COLIIDAE. Colies

### Colius striatus affinis Shelley

*Colius leucotis affinis* Shelley, Ibis, 1885, p. 312: Dar es Salaam.

1 ♂, 1 ♀, Morogoro, Tanganyika Territory, 20 August 1917.
1 ♂, 1 ♀, Bagilo, Uluguru Mountains, Tanganyika Territory, 20 May 1920.
1 ♂, 1 ♀, Kilosa, Tanganyika Territory, 2–3 February 1921.

"Also Dar es Salaam." (A.L.)

The pair from Morogoro are erythristic and at first sight are extremely different from the others. They are also slightly smaller in size. The wing lengths of the birds are as follows: Morogoro, ♂ 88, ♀ 87; Kilosa, ♂ 93.5, ♀ 91; Bagilo, ♂ 89, ♀ 87 mm.

The exact western limits of the range of *affinis* are not known. The form *berlepschi*, which is nearest to *affinis*, but darker generally, occurs, in the regions here under discussion, only in Southwestern Tanganyika Territory. Apparently the area of intergradation between the two is very extensive, as I know of no undoubted examples of *affinis* from any locality west of Kilosa. The form *cinerascens* Neumann, described from Irangi, is based on an intermediate, but being nearer to *affinis* than to *berlepschi* may be better synonymized with the former than the latter.

### Colius striatus mombassicus van Someren

*Colius striatus mombassicus* van Someren, Bull. Brit. Orn. Cl., **40**, 1919, p. 26: Changamwe.

1 ♂, Mombasa, Kenya Colony, 31 May 1918.

Sclater[1] regards *mombassicus* as a synonym of *affinis*, but I find that the characters given by van Someren hold. I have seen three examples of *mombassicus* and eight of *affinis*. The former race differs from the latter in being lighter, more grayish, on the head, neck, and mantle, and more white on the cheeks. The wing length in *mombassicus* ranges from 87–92 mm.; that of the present specimen is 91 mm.

This race inhabits the coastal area of Kenya Colony from Mombasa

[1] Syst. Avium Ethiop., pt. 1, 1924, p. 265.

(inland to Changamwe and Voi) north to Lamu, Kismayu, and southern Somaliland.

The single specimen collected was molting the remiges and rectrices, but no ecdysis is visible on the head and body.

### Colius striatus jebelensis Mearns

*Colius striatus jebelensis* Mearns. Proc. U. S. Nat. Mus., **48**, 1915, p. 394: Gondokoro.

1 ♂, Kabura, Mawokota, Uganda, 27 August 1919.
1 ♀, Kabare, Bukoba, Tanganyika Territory, December 1922.

*Colius s. ugandensis* is a synonym. Hartert[1] writes that *kikuyuensis* is really recognizably distinct from *ugandensis*, and a good series of both supports the supposed characters of the former.

This is the coly of Uganda and Northwestern Tanganyika Territory, merging in the Mt. Elgon region with *kikuyuensis*.

### Colius striatus kikuy, ensis van Someren

*Colius striatus kikuyuensis* van Someren, Bull. Brit. Orn. Cl., **40**, 1919, p. 27: Nairobi.

1 immature ♂, Nairobi, Kenya Colony, 2 June 1919.
1 ♂, 1 ♀, Ngong, Nairobi, Kenya Colony, 14 July 1919.
"Also Tumutumu, Kenya Colony." (A.L.)

The immature bird is so very young that it must have been taken from the nest. It is just acquiring the first pennaceous feathering, which resembles that of the adult on the underparts, the remiges and rectrices, and the head. The upper wing coverts are broadly tipped with sandy rufous, and the back is broadly striped sandy rufous buff and fuscous brown.

This race is darker and larger than *jebelensis*.

On 7 June 1919 a nest and three eggs were found at Nairobi.

### Colius indicus pallidus Reichenow

*Colius indicus pallidus* Reichenow, Orn. Monatsb., 1896, p. 4: Kionga, Rovuma River.

1 ♂, 1 ♀, Lumbo, Mozambique, 15 July 1918.

As far as I am able to ascertain, these two specimens constitute the southermost records for the race. They agree with the description of

[1] Nov. Zool., **31**, 1924, p. 128.

*pallidus* which I have not otherwise seen, but may be somewhat intermediate between that form and the typical race.

Both specimens are adults in fairly fresh plumage. The wing measurements are 91.5 mm., in the male, and 89 mm., in the female.

Loveridge[1] found a dozen or so nests at Lumbo in October. Nearly all of them contained highly incubated eggs or young. The clutch was invariably three.

### Colius macrourus pulcher Neumann

*Colius macrourus pulcher* Neumann, Journ. f. Ornith., 1900, p. 190: Teita.

1 ♀, Morogoro, Tanganyika Territory, 26 November 1918.

"Also seen at Dar es Salaam." (A.L.)

Sclater[2] gives the distribution of this bird as "Baro River and S. W. Abyssinia, south to eastern Uganda and Kenya Colony." This should be extended to include the northeastern parts of Tanganyika Territory to Morogoro and Dar es Salaam. It appears to be uncommon in the southern part of its range.

## Order TROGONIFORMES

### Family TROGONIDAE. Trogons

### Apaloderma narina narina (Stephens)

*Trogon narina* Stephens, in Shaw's Genl. Zool., **9**, 1815, p. 14: Anteniquoi, that is, Knysna district (ex Levaillant).

1 ♀, Nairobi, Kenya Colony, 18 October 1915.
1 ♀, Ngong Forest, Kenya Colony, 14 July 1919.
1 ♂, Ngong Forest, Kenya Colony, 16 September 1920.

"Also Morogoro, Tanganyika Territory." (A.L.)

On the back of the label of the last specimen listed, the collector wrote, "Keeps to thick forest and is very rarely seen. This is the third specimen I have met with."

This trogon is found throughout our region but as it is purely sylvan in habitat, its range is very discontinuous and patchy.

[1] Proc. Zool. Soc. Lond., 1922, pp. 851–852.
[2] Syst. Avium Ethiop., pt. 1, 1924, p. 268.

The female from the Ngong Forest was molting into adult plumage. It still has a few juvenal inner greater upper wing coverts (with large buffy white spots). The under tail coverts are pale grayish, although Reichenow[1] writes that in young birds the belly and under tail coverts are pale red.

The male was molting the rectrices, the molt being centrifugal.

Recently van Someren[2] has described a coastal race from the Sokoke Forest, Kenya Colony, *littoralis*, said to be smaller than *narina*.

### Heterotrogon vittatum vittatum (Shelley)

*Hapaloderma vittatum* Shelley, Proc. Zool. Soc. Lond., 1882, p. 306: Mamboia, Tanganyika Territory.

1 ♀, Uluguru Mountains, Tanganyika Territory, 19 May 1921.
1 ♂, Bungu, Usambara Mountains, Tanganyika Territory, September 1921.

A series of 17 specimens reveals several hitherto unknown facts about the plumages of this rather uncommon trogon. The juvenal males resemble the females on the underparts and have the belly and under tail coverts reddish pink, the breast and throat tawny brown. Just as the juvenal stage of *Apaloderma narina* the inner greater upper wing coverts and tertials with large buffy white spots, so the corresponding plumage of the present species has these feathers with white spots, while the majority of the upper wing coverts are finally barred with white as in the adults. The postjuvenal molt is complete. The tail molt is centrifugal.

This trogon occurs in mountain forests throughout the country represented by the present collection.

Van Someren[3] attempts to separate Uganda birds as *H. v. minus* (Chapin), but this name is a synonym of *Apaloderma aequatoriale* Sharpe, and is therefore not available.

In a more recent paper van Someren[4] calls these Uganda birds *camerunensis* Reichenow.

*H. v. keniensis* Bowen, described from the Meru area requires further confirmation before it can be accepted definitely as a valid race. Van Someren's material did not uphold it.

[1] Vög. Afr., **2**, 1903, p. 213.
[2] Bull. Brit. Orn. Cl., **51**, 1931, p. 80.
[3] Nov. Zool., **29**, 1922, p. 73.
[4] Nov. Zool., **37**, 1932, p. 286.

# Order CORACIIFORMES

## Family ALCEDINIDAE. Kingfishers

### Ceryle rudis rudis (Linnaeus)

*Alcedo rudis* Linnaeus, Syst. Nat. 10th ed., 1758, p. 116: Egypt (ex Hasselquist)

1 ♂, 1 ♀, Dar es Salaam, Tanganyika Territory, 13 June 1918.

"Also Kilosa. Towards evening at Dar es Salaam, kingfishers of this species which, during the day have been scattered along the coast engaged in fishing, assemble in large flocks and fly up the rivers to roost. A very common bird." (A.L.)

This kingfisher is widely distributed throughout the territory under discussion in this paper, but is not found away from water. It is one of the true fish-eating kingfishers, and unlike the species of *Halcyon* does not feed on insects at all.

The male has the broad pectoral black band continuous across the breast while the female has it interrupted medially by white. The former sex also has a second, more posterior, narrow black pectoral band which the latter lacks.

The female is the longest-billed bird of a series of 40 specimens examined, having a culmen length of 63 mm.

### Megaceryle maxima maxima (Pallas)

*Alcedo maxima* Pallas, Spic. Zool. fasc. vi, 1769, p. 14: Cape of Good Hope.

1 ♀, Kilosa, Tanganyika Territory, 21 April 1921.
1 ♂, Kilosa, Tanganyika Territory, 7 July 1921.

"Also Bungu. Not at all an uncommon bird during the rains in the swamped country around Tindiga." (A.L.)

The giant kingfisher is found throughout tropical East Africa but is practically confined to the vicinity of forest streams or, at least, streams with well wooded banks. The preceding species (*Ceryle rudis*) is found near open country streams and marshes but the present one is decidedly more sylvan in its choice of habitat.

These two specimens are average in size and have the following measurements:

female—wing 197; tail 116; culmen from base 86.5 mm.
male—wing 194; tail 117; culmen from base 91 mm.

### Alcedo semitorquata Swainson

*Alcedo semitorquata* Swainson, Zool. Illustr. **3**, 1823, pl. cli: Great Fish River, Cape Province.

1 juvenal ♂, Morogoro, Tanganyika Territory, 28 November 1917.
"Also Dar es Salaam, Tanganyika Territory, and Lumbo, Mozambique." (A.L.)

This specimen was a nestling when collected, and has the remiges and rectrices only partly grown. The body and head feathers are well developed and the plumage is like that of the adult except that the breast feathers are narrowly tipped with dull, dusky brown. The bill is entirely black as in adult males. According to Reichenow,[1] the female has the base of the mandible reddish.

Besides the juvenal bird I have seen two unsexed adults (both with wholly black bills and therefore probably males), one of which is from South Africa, the other from Tanganyika Territory.

Laubmann[2] has recently separated the birds of northeastern Africa under the name *heuglini* on the basis of longer wings. He states that the ranges of the two forms are not clearly known but that birds from Tanganyika Territory belong to the typical, short-winged race. However, the two forms seem to me to be rather doubtfully distinct at best. Laubmann states that *heuglini* has a wing length of 86 mm., and the typical form, of 80.6 mm. The South African specimen examined has a wing 84 mm., long, the adult from Tanganyika Territory, 80 mm. It seems that the wing length is variable, and caution should be exercised in its use as a taxonomic character.

### Corythornis cristata cristata (Pallas)

*Alcedo cristata* Pallas in Vroeg, Cat. Adumb. no. 55, 1764, pl. i: Cape of Good Hope.

1 ♂, 1 ♀, Dar es Salaam, Tanganyika Territory, 7 June 1918.
1 unsexed, Kabale, Ruanda, Uganda, 20 September 1919.
2 immature ♀, Kilosa, Tanganyika Territory, 7–12 July 1921.
"Also Kibosi, Ruanda, Uganda." (A.L.)

Young birds have the bill blackish brown instead of reddish and have the underparts, especially the breast, darker less rufous, than in adults.

[1] Vög. Afr., **2**, 1903, p. 293.
[2] Anz. Orn. Ges. Bay. no. 9, 1925, pp. 74–75.

The malachite kingfisher is widely distributed throughout the region under discussion and is fairly common in most places.

### Ispidina picta picta (Boddaert)

*Todus pictus* Boddaert, Tabl. Pl. Enlum., 1783, p. 49: "Juida," that is, St. Louis, Senegal (ex Buffon, Oiseaux, **7**, 1780, p. 229).

1 ♂, Kabura, Mawokota, Uganda, 22 August 1919.
1 ♂, Chantwara, Bukoba, Tanganyika Territory, 26 December 1922.

Two races of the pygmy kingfisher occur within the limits of the region under discussion. The typical form ranges south to extreme northern Tanganyika Territory, but near Dar es Salaam it is said to be replaced by the form *natalensis* which is characterized by having a blue spot on the hind edge of the auriculars. The typical form is recorded by Reichenow[1] from Dar es Salaam as well as the southern race, and also from Zanzibar, Korogwe, Umbugwe, Moshi, etc., in Tanganyika Territory. The southern *natalensis* is definitely recorded from that country only from Dar es Salaam (one record). Grote[2] records a specimen from Mikindani, southeastern Tanganyika Territory, as intermediate between *picta* and *natalensis*, but nearer the latter.

In the Ruanda and Urundi districts (formerly northwestern German East Africa) the two forms meet.

The present two birds are typical *picta*, but Gyldenstolpe[3] records *natalensis* from the Kigezi district, Ruanda, but mentions that *picta* is also known to occur there.

### Halcyon senegalensis cyanoleucus (Vieillot)

*Alcedo cyanoleuca* Vieillot, N. Dict. d'Hist. Nat., **19**, 1818, p. 401: Angola.

1 ♂, 1 ♀, 1 immature ♀, Kome Island, Mwanza, Tanganyika Territory, 24 November 1922.

These three specimens are more or less intermediate between *senegalensis* and *cyanoleucus*, but are not *cinereicapillus* of Mearns. The last named is probably not distinct from *senegalensis*.

In view of the fact that *senegalensis* and *cyanoleucus* seem to occur together in Kenya Colony several writers have suggested keeping

[1] Vög. Afr. **2**, 1903, p. 287.
[2] Journ. f. Ornith., 1912, p. 527.
[3] Kungl. Sv. Vet. Akad. Handlngr., 1924, pp. 276–277.

them apart as specific entities, but until definite evidence of their breeding in the same place is forthcoming, it seems better to consider them as races of the same species.

The two adults have wing lengths of 110 (♂) and 103.5 mm. (♀). A male from South Africa is slightly larger, having a wing 112 mm., long.

### Halcyon senegaloides ranivorus Meinertzhagen

*Halcyon senegalensis ranivorus* Meinertzhagen, Bull. Brit. Orn. Cl., **44**, 1924, p. 44: Pangani River, Tanganyika Territory.

1 ♀, Dar es Salaam, Tanganyika Territory, 25 June 1918.

Inasmuch as I have absolutely no comparative material available, I follow Meinertzhagen and consider the present specimen as *ranivorus*. However, the validity of *ranivorus* seems somewhat doubtful. This form is said to be smaller and slightly paler on the crown than typical *senegaloides*. According to Meinertzhagen, the latter race has a wing length of from 104–111, culmen length 53–54 mm., while *ranivorus* has a wing length of 99–104, culmen 47–52 mm. He records a bird from Dar es Salaam as, "probably intermediate, with a wing of 109 and culmen of 51 mm." The present specimen is also intermediate, having a wing measurement of 107 and culmen of 54 mm. For further remarks on the taxonomy of this species see van Someren, Nov. Zool., **37**, 1932, p. 288.

This kingfisher is found only in the coastal districts of the region under discussion. Sclater[1] writes that the species is found north to Lamu, Kenya Colony, but he apparently overlooked Erlanger's record[2] from Solole, lower Ganale, southern Somaliland. This record is also mentioned by Zedlitz.[3]

### Halcyon albiventris orientalis Peters

*Halcyon orientalis* Peters, Journ. f. Ornith., 1868, p. 134: Inhambane.

1 ♂, 1 ♀, Morogoro, Tanganyika Territory, 3–28 July 1917.
1 ♂, Kilosa, Tanganyika Territory, 24 December 1920.
1 ♀, Kilosa, Tanganyika Territory, 27 January 1921.
1 ♂, Uluguru Mountains, Tanganyika Territory, 14 May 1921.

"Also Mombasa and Dar es Salaam." (A.L.)

[1] Syst. Avium Ethiop., pt. 1, 1924, p. 215.
[2] Journ. f. Ornith., 1905, p. 447.
[3] ibid., 1915, p. 28.

This kingfisher is widely distributed throughout the region represented by the present collection. Being an insectivorous species, it is not restricted to the presence of streams, but is found in the fairly dry thorn country as well as in the more humid coastal areas.

The male taken at Kilosa is molting the remiges. It has very worn rectrices, but no sign of molt is visible in the tail.

I have not seen the specimen from Mombasa, but it probably is *orientalis*. However, it should be noted that Granvik[1] has identified his three Mombasa birds as *erlangeri*. He states that these specimens are all in molt, but does not tell if the wing feathers were fully grown or not. This uncertainty of data, together with the close approximation of his measurements to those of the lower limit of the variational range of *orientalis* make it seem that his birds were probably *orientalis*, a form which has been recorded from Mombasa by several workers. It may be that the birds of that region are somewhat intermediate between *orientalis* and *erlangeri*. Recently van Someren[2] has definitely identified birds from Mombasa as *orientalis*. Hs also casts some doubt on the validity of *prentissgrayi* Bowen, described from Meru. I have seen Bowen's type (unique specimen) and must say it is different from *orientalis* or *erlangeri*.

### Halcyon leucocephala leucocephala (Müller)

*Alcedo leucocephala* P. L. S. Müller, Syst. Nat. Suppl. 1776, p. 94: Senegal.

1 ♂, Morogoro, Tanganyika Territory, 26 March 1917.
1 ♀, Morogoro, Tanganyika Territory, 16 January 1918.
1 immature ♀, Kilosa, Tanganyika Territory, 3 January 1921.
2 ♂, 2 ♀, Mwanza, Tanganyika Territory, 6–11, December 1922.

After examining a series of 126 specimens from the Sudan, Ethiopia, Kenya Colony, Tanganyika Territory, Uganda, Belgian Congo and Cameroon, I have come to the conclusion that while the birds are very variable, it is impossible to divide them into geographic races, and therefore I consider *centralis* and *ugandae* as synonyms of *leucocephala*. It must be admitted that I have seen no Senegalese material and that the one Cameroon specimen examined has the blue of the wings, lower back, and tail more washed with greenish than in any of the others, but inasmuch as Bannerman[3] and Sclater[4] have seen both eastern and

[1] Journ. f. Ornith, 1923, Sonderheft, p. 104.
[2] Nov. Zool., **37**, 1932, p. 288.
[3] Rev. Zool. Afr., **10**, 1922, p. 154.
[4] Syst. Avium Ethiop., pt. 1, 1924, p. 216.

western birds and have united them systematically, I follow them in this regard. In Ethiopia and to a lesser extent in Kenya Colony as well, the birds tend to be darker on the abdomen but this tendency is only an average one and is just what one would expect as the birds approach the range of *semicaeruleus* of southwestern Arabia. The color of the bluish remiges, back, and rectrices is extremely variable but the variations are not correlated with locality. Gylenstolpe[1] has made similar observations and has stated that this character is therefore not to be trusted in taxonomic studies of this species.

In the region represented by the present collection this kingfisher is found throughout the northern half of Tanganyika Territory and all of Kenya Colony, excepting the coastal strip of both countries where it is replaced by *H. l. hyacinthina.* Sclater[2] gives the range of the latter as the "coastal regions of eastern Africa from Lamu south to the Pangani . . . ," but it really extends much farther north, at least as far as Djibouti, French Somaliland.

The female from Morogoro was taken from the talons of a specimen of *Falco peregrinus minor.*

### Halcyon pallidiventris Cabanis

*Halcyon pallidiventris* Cabanis, Journ. f. Ornith., 1880, p. 349: Angola.

1 ♀, Kilosa, Tanganyika Territory, 2 December 1920.

Also a female from Mahaka, Dodoma, Tanganyika Territory, 29 March 1922, now in the American Museum of Natural History.

I have seen no typical Angolan material, but I doubt if van Someren's form *kivuensis* is valid. A series of 17 specimens from Tanganyika Territory (Kilosa, Mahaka, and Ulambo), Kenya Colony (Kisumu and Kenna Tana), and the Belgian Congo (Medje and Luluabourg) shows considerable variation but nothing that appears to be correlated with geography. Sclater[3] considers this bird (which he calls *swainsoni*) a race of *leucocephala* and states that it occurs south of the Zambesi from October to March, and north of it to the Semliki and Ruwenzori from April to September. In this he is mistaken, as I have seen specimens from equatorial East and Central Africa taken in every month except February.

[1] Kungl. Sv. Vet. Akad. Handlngr., 1924, p. 279.
[2] *loc. cit.*
[3] Syst. Avium Ethiop., pt. 1, 1924, p. 217.

With regard to *kivuensis*, it may be noted that van Someren[1] names it and gives its range as "North Tanganyika, Kivu, Albert Edward, and South Victoria Nyanza" but does not describe it or state where the type came from, while on the very next page he lists birds from Kendu Bay south of Speke's Gulf and from South Ankole as *Halcyon pallidiventris*? subsp, nov., and writes that, " . . . This bird undoubtedly belongs to the smaller, pale-bellied, violet-winged birds of the central lake district, which I have named above. I have now met with it on the *east* shore of Victoria Nyanza, from where I obtained 2 ♂, and conclude that it must have wandered out of its true habitat. There can be no doubt, however, as to its correct identification. The birds obtained by the Ruwenzori Expedition belong to this race." Inasmuch as birds from points as widely separated as Luluabourg and Kilosa are alike, it seems highly probable that *kivuensis* (of which even its describer appears none too sure) is not distinct.

Reichenow[2] gives the range of this kingfisher as north to the Ugala country, Tanganyika Territory. However, it extends to Kisumu and Kenna Tana in Kenya Colony.

### Halcyon chelicuti chelicuti (Stanley)

*Alcedo chelicuti* Stanley, in Salt's Abyssinia, App., 1814, p. lvi: Chelicuti, Abyssinia.

1 ♂, Dar es Salaam, Tanganyika Territory, 24 June 1918.
1 ♀, Lumbo, Mozambique, 13 July 1918.

"Also Mombasa, Bungu, Morogoro, and Kilosa." (A.L.)

Grote,[3] in describing *Halcyon chelicuti hylobius*, writes that while this form (intermediate in character between *chelicuti* and *damarensis*) occurs in the Central African forest region east to Lakes Tanganyika and Nyasa, and probably the interior of Tanganyika Territory, the birds inhabiting the coastal belt of that country are typical *chelicuti* with shorter wings (74–81 mm.). The geographic nature of the size variation is perfectly true, but unfortunately for *hylobius*, typical *chelicuti* is a large form with wings of 80–85 mm. Stoneham[4] has recently reviewed the forms of the striped kingfisher and has named the small coastal form *zinjense*. I find his conclusions are not valid.

[1] Nov. Zool., **29**, 1922, p. 77.
[2] Vögel Afr., **2**, 1903, p. 279.
[3] Journ. f. Ornith., 1925, p. 90.
[4] Bateleur, **2**, 1930, p. 51: Dar es Salaam.

The range of *zinjense* if recognizable, would be more extensive than he indicates, however, as the Lumbo bird is small (wing 74 mm.) and would therefore be a new southern record for the "form." Coastal birds are not constantly small as Stoneham suggests.

Roberts[1] in commenting on Hartert's resurrection of the name *damarensis* for the South African race, seems to distinguish between the birds of the western and the eastern part of that region and, while he does not say so, conveys the impression that the birds of South-eastern Africa are not *damarensis*, in which case they might have to be considered "*zinjense*." But a male specimen from the northern Transvaal (Mariba's Hoek, Pietpotgietersrust, H. Friedmann coll.) has a wing length of 84 mm., and is darkly colored—clearly a specimen of *damarensis*. This bird indicates that *damarensis* occurs in the eastern as well as the western parts of South Africa, and I therefore agree with Hartert, who[2] applies this name to all South African birds.

This species of kingfisher occurs throughout the territory under discussion, and, being entirely insectivorous, is widely distributed in the thorn-bush country far from water.

Van Someren[3] considers *zinjense* a synonym of *chelicuti*, a conclusion in which I concur. I would also place *striolata* Lichtenstein, *phaeton* Stoneham, and *variegata* Vieillot in the synonymy of *chelicuti*.

## Family MEROPIDAE. Bee-eaters

### Merops apiaster Linnaeus

*Merops apiaster* Linnaeus, Syst. Nat. 10th ed., 1758, p. 117: S. Europe.

1 ♂, 1 ♀, Morogoro, Tanganyika Territory, 17 October 1917.
1 ♂, Kilosa, Tanganyika Territory, 27 December 1920.
2 ♀, Kilosa, Tanganyika Territory, 25 January 1921.

The two birds from Morogoro and the male from Kilosa are in post-juvenal molt, the ecdysis affecting only the body feathers, as the wings and tail are old and much abraded.

This bird is found in East Africa only during the northern winter. According to von Heuglin, the species arrives from Europe in North-eastern Africa (Ethiopia and adjacent parts of the Sudan and the Red Sea coastlands) in early August and migrants continus to pass through

[1] Ann. Transv. Mus., **10**, pt. ii, 1924, p. 80.
[2] Nov. Zool., **23**, 1921, p. 106.
[3] Nov. Zool., **37**, 1932, pp. 288–289.

until October. The bird spreads south rapidly, as it has been taken at Zomba, Nyasaland, in August, and Layard found it to arrive regularly in the Cape Province as early as the latter part of that month. I know of no definite Tanganyika record earlier than the middle of October, but the absence of records in this case means nothing. The return flight begins in March, all the birds leaving Ethiopia and the Sudan by the middle of May. Here again Tanganyika records are conspicuously absent, late March being the latest one I can find, but again their absence has no significance.

It is strange that Meinertzhagen[1] does not mention this species in his valuable notes on the migration of birds in East Africa. From a compilation and summation of the African records of this bee-eater, it appears that it migrates down the Red Sea and the Nile valley, and apparently nowhere between that valley and the Atlantic coast of Africa. This explains why Lynes did not observe it in Darfur.

Grote[2] does not refer directly to Kenya Colony or Tanganyika Territory, but gives an account of this bird's migration in northeastern Africa and then states that the winter quarters are in the southern third of the continent, implying that the birds pass through eastern Africa.

### Merops persicus persicus Pallas

*Merops persica* Pallas, Reise, **2**, 1773, p. 708: shores of Caspian Sea.

1 ♀, Kilosa, Tanganyika Territory, 15 January 1921.
1 ♂, Kilosa, Tanganyika Territory, 4 April 1921.

"Also Dar es Salaam." (A.L.)

This species, like the last, is widely distributed throughout East Africa during the northern winter. The migration dates appear to be slightly earlier for this bird than for *Merops apiaster*, but they overlap much more than they differ.

The female is molting the greater upper wing coverts. The old ones are dull light bluish gray with a greenish cast on the outer webs, and pale rufous tawny on the inner webs. They apparently are juvenal feathers. The new, adult coverts, are green like the rest of the wing and back. This bird also has numbers of worn, blue-tipped feathers on the forehead and crown, and a few on the sides of the neck. It lacks

[1] Ibis, 1922.
[2] Mitteil. Zool. Mus. Berlin, **16**, 1930, p. 57.

the light greenish blue forehead and superciliaries, or at least, has them only indicated but not well developed. The two outermost primaries are only slightly developed, being still largely within their sheaths.

The male is in full adult plumage.

### Merops superciliosus ruficapillus Vieillot

*Merops ruficapillus* Vieillot, Nouv. Dict. d'Hist., Nat. **14**, 1817, p. 23 (ex Levaillant): Africa, restricted type locality, Dar es Salaam.

1 ♂, 1 ♀, Dar es Salaam, Tanganyika Territory, 1 July 1918.

"Also Bungu and Kilosa." (A.L.)

These two specimens agree in general with a long series from Madagascar in the Museum of Comparative Zoölogy, but the male has the crown darker than any of the Madagascan examples. Another male from Tanganyika Territory has a similar dark crown.

*Merops donaldsoni* Oberholser, described from Somaliland[1] is not distinct from *superciliosus* according to Sclater[2]. I have seen no Somaliland material and cannot therefore pass judgment on *donaldsoni*, but the fact that it is lighter and paler than Madagascan birds while the birds of tropical East Africa (Tanganyika Territory) are darker on the crown seems to justify its distinctness. Furthermore, it seems proper to separate the Tanganyika birds from the typical ones, and for them the name *ruficapillus* Vieillot[3] is available. The range of *ruficapillus* extends north into Kenya Colony, as Oberholser[4] writes that two specimens of *Merops superciliosus* from Mombasa, " . . . show little or no approach to *Merops superciliosus donaldsoni* of Somali Land."

Vieillot's name is based on Levaillant's description of a bird said to come from Africa. I here restrict the type locality of *ruficapillus* to Dar es Salaam.

*M. s. ruficapillus* differs from *M. s. superciliosus* only in the color of the male, not of the female. The crown is noticeably darker in *ruficapillus* and the back is greener, more yellowish, less bluish-green than in the typical form.

[1] Proc. U. S. Nat. Mus., **27**, 1904, pp. 737–738.
[2] Syst. Avium Ethiop., pt. 1, 1924, p. 219.
[3] Nouv. Dict. d'Hist. Nat. **14**, 1817, p. 23.
[4] Proc. U. S. Nat. Mus., **30**, 1906. p. 804.

### Merops nubicus nubicus Gmelin

*Merops nubicus* Gmelin, Syst. Nat., **1**, pt. 1, 1788, p. 464: Nubia.

1 ♂, 1 ♀, Dar es Salaam, Tanganyika Territory, 8 February 1919.

"Also Tindiga and Kilosa. Every evening large flocks fly over the Palace Grounds and across the channel at Dar es Salaam to their respective roosting places in the reed-beds south of the town." (A.L.)

Both specimens collected are in fresh adult plumage. The colors in the figures given by Erlanger[1] are not quite correct. The head should be darker and bluer, the red of the back and wings and underparts should be deeper and brighter, and that of the inner secondaries and tertials should be grayish blue instead of pure green.

This bird occurs from the Rufiji River north to Ethiopia and Somaliland. It does not seem to have been recorded in southern Tanganyika Territory, but in Nyasaland and the Zambesi valley it is replaced by a southern, red-throated form, *nubicoides*.

### Aerops albicollis maior Parrot

*Aerops albicollis maior* Parrot, Orn. Monatsb., **18**, 1910, p. 12 (not 1912 as in Sclater, Syst., Avium Ethiop., pt. 1, 1924, p. 221): Bagamoyo.

1 ♂, 1 ♀, Dar es Salaam, Tanganyika Territory, 8 November 1918.
1 ♀, Rutaka, Ruanda, Uganda, 5 October 1919.
1 ♂, Kome Island, Mwanza, Tanganyika Territory, 25 November 1922.
1 ♀, Kabare, Bukoba, Tanganyika Territory, 17 January 1923.

"Also Tindiga." (A.L.)

This series shows considerable variation in the width of the black pectoral band and in the color of the upper tail coverts which are darker and bluer in some birds and lighter and greener in others.

The two specimens from Dar es Salaam are in very worn plumage, the others are fresh.

The typical, western subspecies of this bee-eater, has a smaller bill than *maior*, but the other characters ascribed to it do not hold with any degree of constancy.

In tropical East Africa this bird occurs south to the vicinity of Dar es Salaam, but not beyond that point. There appear to be no known

[1] Journ. f. Ornith., 1905, pl. ix, fig. 1.

instances of the species breeding anywhere in Tanganyika Territory, and Sclater[1] states that it breeds only in the northern half of its range.

### Aerops boehmi (Reichenow)

*Merops* (*Melittophagus*) *boehmi* Reichenow, Orn. Centralbl., 1882, p. 62; Bumi, Tanganyika Territory.

1 ♀, Bungu, Usambara Mountains, Tanganyika Territory, September 1921.
1 ♀, Tindiga, near Kilosa, Tanganyika Territory, 25 August 1922.

This rare species has not hitherto been known from central and northeastern Tanganyika Territory, the previously known range having been confined to the southwestern portion of the country from Msima, the Katuma River, and Bumi to the Rovuma River, Langenburg (i. e. Manda), and Nyasaland. The present specimens extend the range northwards and eastwards for about 400 miles.

Reichenow[2] gives the range of this species as follows: wing 80; tail with middle feathers, 120–130, without middle feathers 70–75; bill 27–30 mm. The present two specimens have slightly shorter wings, longer middle rectrices, and longer bills. They measure as follows: wing 76–77; tail with middle rectrices 130–140, without middle feathers 68–70; bill 31–32 mm. While it may be that the present birds represent a different, unnamed form, I hesitate to describe them in the absence of any comparative material.

### Melittophagus pusillus meridionalis Sharpe

*Melittophagus meridionalis* Sharpe, Cat. Bds. Brit. Mus., **17**, 1892, p. 45, pl. i, fig. 4: type in British Museum from Pinetown, Natal.

1 ♂, 1 ♀, Dar es Salaam, Tanganyika Territory, 13 June 1918.
1 ♀, Masaka, Buganda, Uganda, 30 August 1919.
1 ♂, Kabura, Mawokota, Uganda, 27 August 1919.
1 ♂, Singo, Ruanda, Uganda, 25 September 1919.
1 ♂, Ilonga, Kilosa, Tanganyika Territory, 22 March 1923.

"Also Bagilo, Morogoro, Kilosa, Tanganyika Territory, and Lumbo, Mozambique." (A.L.)

This race occurs throughout Tanganyika Territory except in the Kilimanjaro area and east from there to the coast south to the Pan-

[1] Syst. Avium Ethiop., pt. 1, 1924, p. 221.
[2] Vög. Afr., **2**, 1903, p. 319.

gani River, in which area it is replaced by *cyanostictus*. The two forms may be told apart by the fact that *meridionalis* has no blue band on the forehead while *cyanostictus* has.

An inhabitant of the thorn-bush country, this bird is frequently found far from water, but is equally common along streams and the sea coast.

### Melittophagus pusillus cyanostictus (Cabanis)

*Merops cyanostictus* Cabanis, in von der Decken's Reisen, **3**, 1869, p. 34: Mombasa.

1 ♀, Mombasa, Kenya Colony, 25 May 1918.
1 ♀, Bungu, Usambara Mountains, Tanganyika Territory, September 1921.

"Intermediates between *cyanostictus* and *meridionalis* occur at Kilosa." (A.L.)

The female from Mombasa is in juvenal plumage.

This subspecies occurs from British Somaliland, Shoa, Arussiland, and Gallaland, south through Kenya Colony to the Kilimanjaro district and along the Tanganyikan seacoast to the Pangani River, south of which it is represented by *meridionalis*.

In its ecological habitat this bird is similar to *meridionalis*.

### Melittophagus lafresnayii oreobates Sharpe

*Melittophagus oreobates* Sharpe, Ibis, 1892, p. 320: Savé, Mt. Elgon. (*i.e.* Sabei, northern slopes, *fide* Loveridge, 1936).

1 adult ♂, 1 immature ♂, 1 adult ♀, Ngong, Nairobi, Kenya Colony, 28 July 1919.

"Also Tumutumu and Morogoro." (A.L.)

This bird occurs in the highland districts from Ruwenzori to Elgon, N. Guaso Nyiro, Nairobi, Kilimanjaro, and the Usambara Mountains. In the western part of its range it extends south to the mountain forests west of Lake Tanganyika where Grauer obtained specimens. Sclater[1] seems to have overlooked Sassi's report on Grauer's birds[2] as he gives only Ruwenzori as the western limit of the range of this bee-eater. Granvik[3] has pointed out that there are two color types of this bird,

[1] Syst. Avium Ethiop., pt. 1, 1924, p. 222.
[2] Ann. K. K. Naturhist. Hof. 1912, p. 370.
[3] Journ. f. Ornith., 1923, Sonderheft, pp. 107–108.

a greenish one and a more bluish phase. The series examined by me (14 specimens) corroborates this and shows that there is no geographical or sexual significance to this dimorphism. It appears to be a matter of age as Granvik suggested. He recorded that in the blue type the middle rectrices are blue and all the others have a blue edge. A male from Guaso Nyiro, Kenya Colony (Mus. Comp. Zoöl. 56464) has the middle rectrices blue and all the others green with no blue edges. The central pair of feathers are worn, the others are new. It appears, therefore, that in first adult plumage, the blue color is well developed, and that in older birds it is absent.

According to van Someren,[1] this species breeds in December, February, and July in Kenya Colony where it is very common. He also notes that it is apt to make small, local migrations, a fact which should be kept in mind with reference to the few Tanganyikan records. Morogoro appears to be the southernmost point from which the bird has been reported as yet.

### Melittophagus variegatus loringi Mearns

*Melittophagus variegatus loringi* Mearns, Proc. U. S. Nat. Mus., **48**, 1915, p. 393: Butiaba, Lake Albert, Uganda.

1 ♀, Kome Island, Mwanza, Tanganyika Territory, 27 November 1922.

This race is not too well differentiated from the typical western form. The differences are only average ones, but the subspecies is recognizable. It differs from *variegatus* in being slightly bluer on the forehead and in having darker blue superciliaries. In his original description of this form Mearns gave the characters as " . . . larger and much paler and purer yellow on the underparts," than in *variegatus*. He had seen but one adult of the latter race at the time, however. Grant[2] correctly showed that the characters given by Mearns did not hold, but that on the basis of other slight differences, such as the color of the forehead and superciliaries, the form *loringi* could be maintained.

This specimen is the second locality record for the race from Tanganyika Territory. Emin collected it at Bukoba just on or across the border from Uganda, and so did Grauer many years later. Gyldenstolpe collected several in Ruanda, and it seems that the bird probably occurs throughout northwestern Tanganyika Territory. Mwanza is the southeasternmost point at which it has been taken.

[1] Ibis, 1916, p. 246.
[2] Ibis, 1915, pp. 297–298.

### Melittophagus bullockoides (Smith)

*Merops bullockoides* A. Smith. S. A. Quart. Journ. 2nd ser., 1834, p. 320: S. Africa.

1 ♂, 1 ♀, Ngare Mtoni, Arusha, Tanganyika Territory, 17 April 1916.

"Also Kedong Valley, Kenya Colony." (A.L.)

This species is widely distributed in Tanganyika Territory, Mozambique, and southward, but appears to be numerous nowhere. In Kenya Colony van Someren[1] records it from Nakuru, Naivasha, Kisumu, and the Turkwell River, the latter two records constituting an extension of the range as given by Reichenow.[2]

Both specimens have newly molted rectrices, some of the tail feathers being not quite fully grown, and still basally enclosed in their sheaths. The male is slightly smaller than the female having a wing length of 111 as against 115 mm.

A series of nine birds from Kenya Colony and Tanganyika Territory are somewhat darker above and below than two from South Africa and Damaraland, but the difference is rather slight.

### Dicrocercus hirundineus hirundineus (Lichtenstein)

*Merops hirundineus* A. A. H. Lichtenstein, Cat. rer. rar., 1793, p. 21: no loc.: Orange River (ex Levaillant, Hist. Ois. Paradis, 1806, p. 36).

1 ♂, 1 ♀, Lumbo, Mozambique, 6 August 1918.

"Also a pair at Morogoro on 15 June 1917." (A.L.)

This bee-eater is scarce in collections and figures relatively little in the literature of East African birds. It seems therefore that it is probably local and uncommon throughout its range. Sclater[3] gives Dar es salaam as the northernmost locality for the typical race, but van Someren[4] writes that, " . . . specimens from Vanga undoubtedly belong to the southern race . . . ," which extends the range of *hirundineus* northward for about 250 miles.

Both specimens are in fresh, adult plumage.

[1] Nov. Zool., **29**, 1922, p. 80.
[2] Vög. Afr., **2**, 1903, pp. 311–312.
[3] Syst. Avium Ethiop., pt. 1, 1924, p. 224.
[4] Nov. Zool., **29**, 1922, p. 80.

## Family CORACIIDAE. Rollers

### Coracias garrulus garrulus Linnaeus

*Coracius garrulus* Linnaeus, Syst. Nat. 10th ed., 1758, p. 107: Europe: restricted type locality, s. Sweden.

1 ♀, Parklands, Nairobi, Kenya Colony, 29 October 1915.
1 ♂, 1 ♀, Morogoro, Tanganyika Territory, 10 December 1917.

"Also Ilonga, Kilosa, and Zengeragusu." (A.L.)

The European roller is a common winter visitor from the north throughout all of tropical and Southern Africa except in forested areas. All three specimens are in very worn plumage, while birds collected in Kenya Colony in March by the senior author are in fresh plumage. Van Someren[1] writes that in that country the birds are in full fresh plumage in February and March. It follows that the molt takes place in late December, January, and early February.

The Nairobi bird is young, having the top of the head greenish, the undersides paler, and the upper parts generally lighter than the adults. It is molting the feathers of the interscapulars and back, the new brown feathers being much darker than the old ones.

This species is very noticeable on account of its choice of exposed perches. Along the railway lines it is often seen resting on the telegraph wires; elsewhere it chooses the top, outermost branches of the Acacia trees. It is a bird that every traveler sees during the northern winter and consequently it is widely known throughout Africa.

It winters in Kenya Colony, Uganda, and southwards, but appears to be wholly a migrant in the Sudan.

Meinertzhagen[2] writes that only typical *garrulus* migrates to East Africa, although *semenowi* breeds in the valley of the Jordan, not far from the breeding grounds of *garrulus* (coastal plains of Palestine and the Judea highlands).

The migrants arrive in the Sudan early in September and occur throughout October at the end of which month practically all have gone south; in Northern Somaliland in the middle of October and in November; in Kenya Colony they arrive in late October and early November, and while most of them go through to more southern areas, many of them winter. Meinertzhagen writes that in Kenya Colony, birds of the year arrive about a fortnight before the adults.

[1] Nov. Zool., **29**, 1922, p. 73.
[2] Ibis, 1922, pp. 50–51.

On the way north, the birds from South Africa and Rhodesia pass through Tanganyika Territory and Kenya Colony during March and early April. Practically all have left tropical East Africa by the second week in April. The migration routes followed in spring and autumn are somewhat different. In autumn the main flight is down the valley of the Nile although birds come across from Arabia into southern Somaliland and down the east coast as well. In the spring, however, relatively few birds go north through Egypt; the majority appear to follow the coast and then fly across the Red Sea. Although not enough data are available for a serious study of the migrations of this roller, the following suggestion may be of interest. The heavy rains in the Sudan occur during July, August, and September and consequently vegetation is at its best and insects most numerous at that time. During this season the rollers come through and undoubtedly find an abundance of food. During March and April the food supply is not as rich, the birds are in more of a hurry, and cover longer distances between halts for feeding, and are, consequently, less attracted by the valley of the Nile.

### Coracias spatulatus Trimen

*Coracias spatulatus* Trimen, Proc. Zool. Soc. London, 1880, p. 31: Leshumo valley, near Victoria Falls.

1 ♀, Kipera, Kilosa, Tanganyika Territory, 22 February 1923.

The outer rectrices are not fully grown in this specimen, being less than an inch longer than those of the next pair.

I have seen three Angolan specimens and cannot find any constant characters on which to uphold the validity of *dispar*, which I therefore consider a synonym. Sclater[1] lists it as doubtfully distinct.

The Racquet-tailed Roller is distributed throughout the interior of Tanganyika Territory from the Unyamwesi and Ugogo districts through the Usegua, Ugalla, and Kakoma country south to Nyasaland, Southern Rhodesia, and Mozambique. It also occurs in the Kasai and Katanga districts of the Belgian Congo, and in Northern Rhodesia.

Kothe[2] records it from the Urungu area where it seems to be commoner than in the rest of Tanganyika Territory, as many as eight being seen at one time.

[1] Syst. Avium Ethiop., pt. 1, 1924, p. 207.
[2] Zool. Erg. Exp. Hauptmann a. D. Fromm, 1911, 2, Aves, pp. 354–355.

### Coracias weigalli Dresser

*Coracias weigalli* Dresser, Ann. Mag. N. H., 1890, p. 351: Newala, north of Rovuma River.

1 ♂, Kipera, near Kilosa, Tanganyika Territory, 7 August 1922.

According to Sclater,[1] *weigalli* is apparently based on a young *spatulatus*. However, the present specimen certainly does not look like a young bird. Furthermore, Reichenow[2] states that the young of *spatulatus* has the upperparts paler than the adults, the outer tail feathers not elongated, and the three outermost ones cinnamomeous on the terminal parts of the outer webs. This specimen has the back practically the same shade as an adult *spatulatus* (somewhat more greenish on the head), has no cinnamon-brown on any of the rectrices and the outermost pair are much elongated, exceeding the next pair by 70 mm. Until convincing proof of the identity of the two species is brought forth, it seems more in keeping with what little we know to regard them as separate. It must be admitted that it is rather curious that two such closely related forms should inhabit the same country.

*Coracias weigalli* seems to be a rare bird in collections. Reichenow[3] gives only two localities—Newala and Lumbuti. I know of no other records. Grote[4] lists *weigalli* in his paper on the birds of Southeastern Tanganyika Territory, but refers only to Newala on the authority of Weigall. The present specimen then seems to be the third one known. (Loveridge collected another also at Kipera, which he presented to the Tring Museum, making four in all.) It extends the known range of this bird northwards for about 300 miles.

Since the above was written, Bangs and Loveridge[5] have concluded that *weigalli* is not a young *Coracias spatulatus,* a happy confirmation of my remarks above.

### Coracias caudatus caudatus Linnaeus

*Coracias caudatus* Linnaeus, Syst. Nat. 12th ed., **1**, 1766, p. 160: Angola.

1 ♂, 1 ♀, Kongwa, Tanganyika Territory, 23 April 1917.
1 ♂, Mbala, Kilosa, Tanganyika Territory, 27 February 1923.

"Also Morogoro, Kipera, Kinyambwa, and Lalago, Tanganyika Territory, and Lumbo, Mozambique." (A.L.)

[1] Syst. Avium Aethiop., pt. 1, 1924, p. 206.
[2] Vög. Afr., **2**, 1903, pp. 222–223.
[3] *loc. cit.*
[4] Journ. f. Ornith., 1912, p. 525.
[5] Bull. Mus. Comp. Zool., **75**, 1933, p. 171.

Neumann[1] separated East African from typical Angolan and South African birds under the name *suahelicus* on the basis of darker rump, upper tail coverts and lesser upper wing coverts. I have seen no birds from Angola but three adults from South Africa (which, according to Neumann should be typical *caudatus*) vary greatly, two of them being exactly like East African birds, while one has a light blue rump. One East African bird also has a light rump, but most of the series examined are dark. Claude Grant[2] writes that none of the characters for *suahelicus* hold true, and therefore synonymizes it with *caudatus*, a result with which my observations agree.

The Mbala bird is darker than either of the others both above and below.

This roller is common and widely distributed over the whole of the territory under discussion in this paper, excepting, of course, forested areas.

Loveridge[3] found this roller nesting at Bissel, Kenya Colony, on 20 December 1915, and at Lumbo, Mozambique, in October 1918.

### Coracias naevius naevius Daudin

*Coracias naevia* Daudin, Traité, **2**, 1800, p. 258: Senegal.

1 ♀, Sanga, Mwanza, Tanganyika Territory, 16 October 1922.
1 ♂, Mwanza, Tanganyika Territory, 14 November 1922.

"Also Suna and Sagayo. Not nearly as common in Tanganyika Territory as *C. garrulus* and *C. caudatus*. I have seen one on the telegraph wires near the Central Railway at Tabora, which, with Suna, is the most easterly point at which I have encountered this roller." (A.L.)

*C. n. sharpei* is a synonym.

These two specimens are quite unlike, the female being much more brightly colored below with much narrower white shaft stripes on the feathers, and with the crown more rufous-purplish, the back more greenish, less brownish than the male. The female has the crown mixed greenish and brownish in about equal proportions.

The collector's notes indicate that this bird is scarce in eastern Tanganyika Territory, but it is not absent, as Kirk obtained a specimen at Dar es Salaam, Böhm at Igonda, and Fischer at Soboro. It does

[1] Journ. f. Ornith., 1907, p. 593.
[2] Ibis, 1915, pp. 261–262.
[3] Proc. Zool. Soc. Lond., 1922, p. 849.

not seem to occur far south, however, the latitude of Dar es Salaam being its southern limit. In Kenya Colony it is fairly widespread, and it is found in northern and northeastern Uganda as well.

The measurements of the birds are as follows:

male—wing 190, tail 151, culmen 42 mm.
female—wing 180, tail 135, culmen 37.5 mm.

### Eurystomus afer suahelicus Neumann

*Eurystomus afer suahelicus* Neumann, Journ. f. Ornith., 1905, p. 186: Tschara, (*i.e.* Charra) Tana River.

1 ♂, Morogoro, Tanganyika Territory, 24 October 1917.
1 ♀, Kilosa, Tanganyika Territory, 13 December 1920.
1 immature ♂, Kilosa, Tanganyika Territory, 21 January 1921.

"Very common at Kilosa, far more so than at Morogoro." (A.L.)

The young bird agrees quite well with the description given by Reichenow.[1] The only noteworthy feature presented by it not mentioned by Reichenow is that the feathers of the flanks and under tail coverts have dark, blackish shaft streaks. These are also present in two other young birds in the Museum of Comparative Zoölogy, but are better developed in the present one than in either of the others. Inasmuch as one of the others is a male and one a female, this difference cannot be sexual.

This broad-billed roller is widely distributed over most of the territory represented by the present collection. In Uganda (east to Mt. Elgon) it is replaced by another race, *rufobuccalis*, which has the cheeks more rufescent, less violaceous, in color. Sclater[2] gives the range of *suahelicus* as including the Eastern Belgian Congo. However, Sassi[3] records *rufobuccalis* from Uvira, Usumbura, Kissenji, Beni, Irumu, etc. and an intermediate between *rufobuccalis* and *suahelicus* from Beni. On the other hand, Gyldenstolpe[4] writes that birds from the Semliki valley and the Eastern Belgian Congo are intermediate between *rufobuccalis* and typical *afer!*

[1] Vög. Afr., **2**, 1903, p. 229.
[2] Syst. Avium Ethiop., pt. 1, 1924, p. 209.
[3] Ann. K. K. Naturhist. Hofmus. Wien, **26**, 1912, pp. 364–365.
[4] Kungl. Sv. Vet. Akad. Handlngr., 1924, pp. 280–281.

## Family UPUPIDAE. Hoopoes

### Upupa africana Bechstein

*Upupa africana* Bechstein, Kurze Uebers., **4**, 1811, p. 172: Congo to the Cape.

1 ♂, Morogoro, Tanganyika Territory, 27 June 1917.
1 ♀, Morogoro, Tanganyika Territory, 13 July 1917.
1 immature ♂, 1 immature ♀, Kilosa, Tanganyika Territory, 18 January 1921.
1 unsexed, Kilosa, Tanganyika Territory, 12 February 1921.

"Also Nairobi, Kenya Colony, and Lumbo, Mozambique." (A.L.)

The unsexed bird from Kilosa is probably a female as it is considerably paler than the male from Morogoro.

Van Someren[1] considers *africana* a race of *epops*, but, although the two are geographically distinct in their breeding ranges, the difference in the pattern of the primaries is so great as to constitute specific characterization.

This hoopoe occurs throughout the territory represented by the present collection.

## Family PHOENICULIDAE. Wood-hoopoes

### Phoeniculus purpureus marwitzi (Reichenow)

*Irrisor erythrorhynchus marwitzi* Reichenow, Orn. Monatsb., **16**, 1906, p. 171: Mkalama, Kondoa Irangi district, Tanganyika Territory.

1 adult ♂ ?, 1 immature ♂, 1 adult ♀, Kilosa, Tanganyika Territory, 21 January, 1921.

"Also Bungu, Morogoro, Kongwa, Msimba, and Rukaya." (A.L.)

The immature bird resembles the adults but has the feathers of the chin and throat light brownish and the bill is black instead of red as in older birds. The adult ♂ ? is probably a female as it is rather small, agreeing in size with the female listed above and with others in the series examined. The measurements are as follows:

♂ ? (= ♀) adult: wing 136.5; tail 200; culmen 34 mm.
♀ adult : wing 134.0; tail 202; culmen 36.5 mm.
♂ immature : wing 142.0; tail 198; culmen 44.5 mm.

[1] Nov. Zool., **29**, 1922, p. 81.

This race occurs throughout the territory under discussion. In northern Tanganyika Territory and Kenya Colony its range is limited on the west by the Rift Valley according to Sclater,[1] but this is not so as it occurs at Kisumu and in Uganda.

According to Grant,[2] *Irrisor erythrorhynchus brevirostris* Gunning and Roberts (described from Boror, Mozambique) is a synonym of *marwitzi*. Roberts[3] however, maintains the name in his check-list of South African birds.

### Phoeniculus bollei jacksoni (Sharpe)

*Irrisor jacksoni* Sharpe, Ann. Mag. Nat. Hist. (6), **6**, 1890, p. 503: Kikuyu country, Kenya Colony.

1 ♂, 1 ♀, Ngong Forest, near Nairobi, Kenya Colony, 18 July 1919.
1 immature ♂, Ngong Forest, near Nairobi, Kenya Colony, 16 September 1920.

The immature bird has no white spots on the remiges and rectrices and therefore must belong to this species. Yet it has no whitish on the head, but has that part wholly metallic greenish like the breast and mantle! Claude Grant[4] writes that in a young bird examined by him the head and throat were almost pure white with an admixture of black. Granvik[5] states that in young specimens the, " . . . bronze-green patches on the back and under surface are washed with blue, which tint, however, disappears more and more in old birds and is replaced by a more uniform green, sometimes yellowish-green, glossy colour." In the present case there is no bluish wash in the young bird but there is in the two adults. The young bird has a blackish-gray bill, about two-thirds grown.

The measurements of the two adults are as follows:

male—wing 135; tail 162; culmen from the base 47 mm.
female—wing 126; tail 131; culmen from the base 37.5 mm.

Van Someren[6] suggests that there may be three forms united under the name *jacksoni* and that Kikuyu birds have the general color of the head and mantle more golden green, while those from the Elgeyu Escarpment are more bluish. This is not confirmed by the material examined.

[1] Syst. Avium Ethiop., pt. 1, 1924, p. 233.
[2] Ibis, 1915, p. 285.
[3] Ann. Transv. Mus., **10**, 1924, p. 149.
[4] Ibis, 1915, p. 287.
[5] Journ. f. Ornith., 1923, Sonderheft, p. 113.
[6] Nov. Zool., **29**, 1922, p. 82.

### Rhinopomastus cyanomelas schalowi Neumann

*Rhinopomastus schalowi* Neumann, Journ. f. Ornith., 1900, p. 221: Usandawi, Tanganyika Territory.

1 ♀, Morogoro, Tanganyika Territory, 24 May 1917.
1 ♂, Morogoro, Tanganyika Territory, 12 July 1917.

"Also Dar es Salaam, Kilosa, and Lumbo." (A.L.)

The female is molting the wings and tail; the male is in somewhat worn plumage. The latter is more reddish-purple, less bluish-violet on the scapulars and interscapulars than any other comparable specimens examined.

The number of primary coverts that are white is variable in this bird. Both the above specimens have only the innermost greater upper primary covert white, but other specimens have several of this color, and one has them all dark blue.

This bird is found throughout the territory under discussion and is quite common in most of its range.

### Rhinopomastus minor extimus Friedmann

*Rhinopomastus minor extimus* Friedmann, Proc. N. Eng. Zool. Cl., **11**, 1929, p. 29: Dodoma, Tanganyika Territory.

1 ♂, Dodoma, Tanganyika Territory, 25 December 1918.
1 ♀, Dodoma, Tanganyika Territory, 1 December 1921.

"Also seen at Mtali's. Rather a scarce bird, not common like *R. c. schalowi*." (A.L.)

While with the Smithsonian-Chrysler Expedition, Loveridge collected another male at Dodoma on 7 July 1926, which agrees with the male listed above but has a somewhat longer bill and shorter wing. The difference, however, is wholly within the limits of ordinary individual variation.

The present subspecies, which resembles *cabanisi*, but is larger (wing 106–112 mm. as against 97.5–102 mm., in the latter), occurs from Mangasini, Usandawi, and the Dodoma district, central Tanganyika Territory, north to southern Kenya Colony (Taveta and Teita districts to Southern Ukamba and Southern Kavirondo).

The male listed above is the type of *extimus*.

Van Someren,[1] while agreeing that southern birds cannot be con-

[1] Nov. Zool., **37**, 1932, pp. 290–291.

sidered *cabanisi*, suggests that calling them *extimus* merely provides one more name with many intermediate birds harder to place than before. It seems just the contrary to me; they are more readily allocated as the limits of intergradation are narrowed.

## Family BUCEROTIDAE. Hornbills

### Bycanistes buccinator buccinator (Temminck)

*Buceros buccinator* Temminck, Pl. Col. livr. 48, pl. cclxxxiv, 1824: Cape of Good Hope.

1 ♀, Bagilo, Uluguru Mountains, Tanganyika Territory, 13 June 1922.
1 ♂, 2 ♀, Tindiga, near Kilosa, Tanganyika Territory, 13–19 August 1922.
1 ♂, Chanzuru, near Kilosa, Tanganyika Territory, 22 March 1923.

The trumpeter hornbill occurs in forested areas throughout Eastern Africa from the Tana River southwards to the Cape Province.

Grote[1] has considered *fistulator*, *sharpii*, *duboisi*, and *buccinator* as races of one species, although Sclater[2] considers them as three species (*sharpii* and *duboisi* being conspecific). On the whole, Grote's arrangement appears more logical and is adopted in this report.

There is a tremendous amount of variation in the size of the bill and casque, apparently correlated with age. In comparing specimens of the four races this factor must be kept in mind.

### Bycanistes subcylindricus (Sclater)

*Buceros subcylindricus* P. L. Sclater, Proc. Zool. Soc. London, 1870, p. 668, pl. xxxix: West Africa.

1 ♂, Chantwara, Bukoba, Tanganyika Territory, 28 December 1922.
1 ♀, Chantwara, Bukoba, Tanganyika Territory, 8 January 1923.

This species appears to have been taken at but one locality in Tanganyika Territory—the Bukoba area on the Uganda border. It has been taken in the highlands west of Lake Tanganyika (eastern Belgian Congo) by Grauer[3] but not in Ruanda and Urundi. It ranges across Uganda to Mt. Elgon and the Yala River in Kenya Colony.

[1] Mitt. Zool. Mus. Berlin, **13**, 1927, pp. 199–203.
[2] Syst. Avium Ethiop., pt. 1, 1924, p. 225.
[3] cf. Sassi, Ann. K. K. Naturhist. Hofmus. Wien, **26**, 1912, p. 368.

### Bycanistes cristatus brevis Friedmann

*Bycanistes cristatus brevis* Friedmann, Proc. N. Eng. Zool. Cl., **11**, 1929, p. 32: Mt. Lutindi, Usambara Mountains, Tanganyika Territory.

2 ♂, Meru Forest, Arusha, Tanganyika Territory, 13 April 1916.
2 ♂, skulls only, Meru Forest, Arusha, Tanganyika Territory, 13 April 1916.

"Also Mkindo River and Uluguru Mountains." (A.L.)

Grote[1] has mapped out the distribution of the silvery-cheeked hornbill, and as I have shown elsewhere,[2] the birds of the southern part of the range of the species are smaller, particularly with regard to the wing length, than typical, northern *cristatus*. The small form, *brevis*, occurs from Kenya Colony (Meru, Chuka, etc.), southward through Tanganyika Territory to Nyasaland and Eastern Southern Rhodesia.

This species is found chiefly in the larger patches of forest, and is, therefore, very local in its distribution, but it occasionally wanders into the park-like savannas where large trees occur.

Van Someren[3] and Bangs and Loveridge[4] have upheld the validity of *brevis*. Some writers, notably Sclater and Moreau, have considered it invalid, but I have yet to see any evidence against it. Van Someren had 11 skins; Bangs and Loveridge 12 specimens.

### Lophoceros nasutus epirhinus (Sundevall)

*Buceros epirhinus* Sundevall, Oefr. Vet. Akad. Förh. for 1850 (1851) p. 108: Caffr. sup. ad. lat. 24°S., that is, probably Upper Limpopo valley.

1 ♂, 1 ♀, Kilosa, Tanganyika Territory, 18 April 1921.
1 ♀, Mkalama, Tanganyika Territory, 12 October 1922.

This hornbill ranges from Mombasa south through Tanganyika Territory, Mozambique, Rhodesia, the Katanga, and Angola to South Africa. It is widely distributed throughout the Acacia-Mimosa thorn country.

As far as the material examined (37 specimens of all forms of *nasutus* except *forskalii*) indicates, *maraisi* Roberts does not appear to be

[1] Mitt. Zool. Mus. Berlin, **13**, 1927, p. 205.
[2] Friedmann, *loc. cit.*
[3] Nov. Zool., **35**, 1932, p. 287.
[4] Bull. Mus. Comp. Zool., **75**, 1933, p. 176.

recognizable. However, Roberts[1] has defended this form, and more material should be obtained before definitely deciding its status.

The male from Kilosa is immature. The two adult females have the following measurements. The Mkalama bird—wing 218, tail 215, culmen 93; the one from Kilosa—wing 206, tail 203, culmen 80.

### Lophoceros erythrorhynchus erythrorhynchus (Temminck)

*Buceros erythrorhynchus* Temminck, Pl. Col. livr. 36, 1823, p. 19: Senegal.

1 ♂, Kidete Station, Tanganyika Territory, 17 February 1923.

This specimen is now in the collections of the American Museum of Natural History.

The red-billed hornbill occurs throughout the territory under consideration in the present paper. It may be told from the southern form, *caffer,* by virtue of the fact that the bar on the outer rectrices is confined to the outer web, and the white superciliary streak is well developed in *erythrorhynchus* and not in *caffer.*

### Lophoceros deckeni (Cabanis)

*Buceros* (*Rhynchaceros*) *deckeni* Cabanis, in v. d. Decken, Reisen, **3**, pt. 1, 1869, pl. vi, p. 37: East Africa.

1 immature ♀, Morogoro, Tanganyika Territory, 1 June 1917.
1 adult ♂, Morogoro, Tanganyika Territory, 14 July 1917.
1 adult ♀, Bogoti, Wami River, Tanganyika Territory, 9 September 1921.

"Also along the Wami and Mkata Rivers; and at Kinyambwa and Dodoma." (A.L.)

Von der Decken's hornbill occurs in the thorn-bush country of eastern Africa from central Ethiopia south to central Tanganyika Territory (Iringa district).

The immature female is in postjuvenal molt, the molt being confined to the back and inner upper greater wing coverts. Apparently the juvenal remiges and rectrices are retained in the first adult non-breeding plumage. In the juvenal plumage this species and *jacksoni* are very similar, as the bill character is not yet well developed, but *deckeni* is slightly lighter brown above. The similarity between the two in

[1]Ostrich, **2**, 1931, p. 22.

this stage indicates community of descent as much as it is possible for a plumage character to do so.

Grant[1] has shown the difference in the form of the bill in adults of *deckeni* and *jacksoni*, but unfortunately transposed the names, so that the figure of *jacksoni* really represents *deckeni* and vice versa. Van Someren[2] in commenting on Grant's illustration writes that the males have been transposed. From the material I have seen I should certainly say that the females are similarly wrongly placed and assume, therefore, not that van Someren did agree with the figures as regards the females, but that he had none of that sex, and so disregarded them.

The male was in molt when shot. The innermost secondary and the fifth primary are new and only partly grown.

### Lophoceros jacksoni Grant

*Lophoceros jacksoni* Ogilvie-Grant, Ibis, 1891, p. 127: Turkwell, Suk.

1 immature ♀, Bogoti, Wami River, Tanganyika Territory, 9 September 1921.

"Found flying with *L. deckeni* in the Mkata district." (A.L.)

The present specimen is in an advanced state of the postjuvenal molt. The juvenal remiges and rectrices are not shed in this molt, but, with the exception of a few of the inner greater upper wing coverts, the bird is otherwise in adult plumage.

Jackson's hornbill occurs side by side with von der Decken's hornbill and their ranges are practically conterminous. Sclater[3] limits *jacksoni* to northern Uganda and Kenya Colony between Lake Rudolf and Mt. Elgon, and van Someren[4] writes that one might almost be inclined to treat *jacksoni* as a northern race of *deckeni* although he correctly considers them species. On the other hand, Rothschild[5] states that *jacksoni* occurs in the southern part of the range of *deckeni* and is isolated from the latter in parts of Uganda. The truth of the matter is that both occur from Ethiopia to central Tanganyika Territory, from both of which extremes I have seen examples.

Being so much alike, and occupying the same area, one wonders how two such species, apparently only slightly separated phylogenetically,

[1] Ibis, 1915, p. 275.
[2] Nov. Zool., **29**, 1922, p. 76.
[3] Syst. Avium Ethiop., pt. 1, 1924, p. 228.
[4] Nov. Zool., **29**, 1922, p. 76.
[5] Ann. Mag. Nat. Hist., (9) **14**, 1924, p. 317.

could have developed. It would be well worth while to investigate the breeding seasons of each to see if there might not be any physiological isolation tending to render the competition between them less keen. It is only fair to say that it is not impossible that *jacksoni* and *deckeni* are not two species, but merely age forms of a single one, although evidence is in favor of considering them as distinct specific entities.

### Lophoceros melanoleucos melanoleucos (Lichtenstein)

*Buceros melanoleucos* A. A. H. Lichtenstein, Cat. Rer. Rar. Nat. 1793, p. 8 Kaffirland.

1 ♀, Lumbo, Mozambique, 31 July 1918.

This specimen appears to be the northernmost record of the typical race of the crowned hornbill. Neumann[1] gives the range of *melanoleucos* as South Africa; Cape Province, Kaffirland, and Natal; while for *suahelicus* he gives the following distribution—British and German East Africa (Kenya Colony and Tanganyika Territory). He does not say anything about the birds of the intervening area—Mozambique, Swaziland, and Zululand. The present specimen is intermediate in nature, having the white head streaks somewhat narrower than in *suahelicus*, but it has some whitish-gray over the eyes. The general color of the upperparts of the Lumbo bird is somewhat lighter than that of the Tanganyika and Kenya specimens.

### Lophoceros melanoleucos suahelicus Neumann

*Lophoceros melanoleucos suahelicus* Neumann, Journ. f. Ornith., 1905, p. 187: Morogoro, Tanganyika Territory.

1 ♂, Morogoro, Tanganyika Territory, 3 August 1917.
1 ♀, Kilosa, Tanganyika Territory, 25 June 1921.

"Also Bungu and Dodoma." (A.L.)

This race differs from the typical form in having the white head streaks wider than in the latter. It occurs throughout eastern Tanganyika Territory, north to southern and south-central Kenya Colony. In western Tanganyika Territory it is replaced by *stegmanni*.

The Morogoro bird was molting the remiges when shot. The fourth and fifth primaries (counting from the outside) and the innermost one

[1] Journ. f. Ornith., 1905, p. 187.

are new and still basally enclosed in their blood sheaths. The Kilosa bird is in fresh plumage. The upper wing coverts are margined with earth-brown, giving the bird a somewhat bicolored appearance, but these edges quickly wear off.

This species occurs in the park-like, tree-dotted savannas and around the margins of forest areas as well. In the Kilimanjaro area it breeds in March and April.

### Lophoceros pallidirostris neumanni Reichenow

*Lophoceros neumanni* Reichenow, Orn. Monatsb., **2**, 1894, p. 50, (nom. nud.); id. Vög. D.-O. Afrikas, p. 128, 1894: Mgera, Tanganyika Territory.

1 ♂, Morogoro, Tanganyika Territory, 19 May 1917.
1 immature ♀, Morogoro, Tanganyika Territory, 15 June 1917.
1 ♀, Kilosa, Tanganyika Territory, 4 January 1921.

"Both this and *L. m. suahelicus* were very common at Morogoro and Kilosa. Flights from the roosting place to the feeding grounds were witnessed almost every morning and the return flights in the evening." (A.L.)

Reichenow[1] states that the bill is blackish in young birds, but the young specimen from Morogoro, which is only three-quarters grown, has the bill much like that of the corresponding stage of *Lophoceros nasutus*, but the mandible duskier towards the base than in the latter. In fact, the specimen bears considerable resemblance to the young of *nasutus* but is lighter brownish, less grayish dusky, on the head and upperparts generally.

The Kilosa bird is molting the body plumage and the inner primaries.

On geographic grounds these birds should be *neumanni* but they are rather large; in fact, about as large as *pallidirostris*. Because of the comparative scarcity of this species in collections, I append the following measurements:

Tanganyika Territory; Morogoro, ♂, wing 227, tail 222, culmen 85 mm.

Tanganyika Territory; Kilosa, ♀, wing 234, tail 227, culmen 87 mm.

Nyasaland; Luchenza, ♀, wing 232, tail 227, culmen 84 mm.

[1] Vög. Afr., **2**, 1903, p. 254.

### Bucorvus cafer (Schlegel)

*Buceros carunculatus cafer* Schlegel, Mus. Pays-Bas, *Buceros*, 1862, p. 20: Caffraria.

1 ♂, Kilosa, Tanganyika Territory, 7 August 1921.

"Also seen at Morogoro and Sagayo. It is very common at Kilosa." (A.L.)

According to the collector's note, natives stated that this specimen entangled its head in long grass and was caught; it was subsequently chloroformed.

The ground hornbill occurs throughout Tanganyika Territory to South Africa, and northwards into southern Kenya Colony (Nairobi and Naivasha). Usually it is seen in pairs and is really numerous in but few localities.

The present specimen is fully adult (that is, it has the bare gular pouch reddish and bluish in color. According to van Someren,[1] this coloration is not attained until the bird is two and a half years old.

Roberts[2] believed that *Buccros cafcr* of Schlegel was preoccupied by *Buceros nasutus caffer* and *B. erythrorhynchus caffer* Sundevall and renamed the ground hornbill *schlegeli*, but Sundevall used *caffer* only in a geographic, not a nomenclatorial sense.

## Order PICIFORMES

### Family CAPITONIDAE. Barbets

### Lybius albicauda albicauda (Shelley)

*Pogonorhynchus albicauda* Shelley, Ibis, 1881, p. 117: Ugogo, Tanganyika Territory.

1 adult ♂, 1 adult ♀, 1 juvenal ♂, Sagayo, Mwanza, Tanganyika Territory, 8 November 1922.

"Fledglings were flushed from a hole in the bank of the Simiyu River on 8 November 1922." (A.L.)

The juvenal male which was taken from the nest hole is like the adults in plumage except the rectrices are laterally bordered with dark grayish. The chin, throat, and breast are pure white. All three birds fit the description of *usukumae* Neumann[3] and, by geography, they

[1] Nov. Zool., **29**, 1922, p. 74.
[2] Ann. Transv. Mus., **11**, 1926, p. 219.
[3] Bull. Brit. Orn. Cl., 1908, p. 46: Kagehi, Usukuma.

should be this form if the race were valid. However, *L. abbotti* Richmond (which is a synonym of *albicauda* according to Grant, Reichenow, Neumann, and others) agrees with the characters of *usukumae*, so the only solution is to consider both as synonymous with *albicauda*. This race occurs in southern Kenya Colony and northern Tanganyika Territory from Ugogo to Mwanza. In the Nairobi district of Kenya

Fig. 3. *Lybius albicauda albicauda*, showing bill of juvenal (upper figure) and adult (lower figure).

Colony (north to the Tana River) it is replaced by *L. a. senex*, a very distinct race with pure white underparts.

Inasmuch as this barbet is rare in collections, I append the measurements of the two adults: wing—106 (♂), 102 (♀); tail 66 (♂), 67 (♀); culmen 28 (♂), 27.5 mm. (♀).

The juvenal bird has a smooth maxillary tomium, and lacks the narial grooves present in the adults.

### Lybius albicauda senex (Reichenow)

*Pogonorhynchus senex* Reichenow, Journ. f. Ornith., 1887, p. 59: Ikange, Ukamba.

1 ♂, 1 ♀, Nairobi, Kenya Colony, 24 August 1920.

This race of *L. albicauda* differs from the typical one in that the underparts are pure white, and looks like a very distinct species, but occasionally individuals are found that have dusky streaks on the abdomen and breast, thereby indicating the close relationship of the two.

Van Someren[1] records this bird from Kitui, Ukamba, Fort Hall, and Nairobi. To this may be added Lönnberg's record from the upper Luazomela River,[2] Gurney's from Kibwezi, the type from Ikange, a specimen from the Ithanga Hills, and another from the Tana River (Lat. 0°15′ S., Long. 38°0′ E.), these last two, now in the Museum of Comparative Zoölogy, and a series in the United States National Museum from Bowlder Hill, Thika River, Tana River, Fort Hall, Saba Saba, and Kamiti, and we have all the localities from which the bird is known to me.

### Lybius torquatus irroratus (Cabanis)

*Pogonorhynchus irroratus* Cabanis, Journ. f. Ornith., 1878, p. 205: Mombasa.

1 ♂, Morogoro, Tanganyika Territory, 2 August 1917.
1 ♂, 1 ♀, Bungu, Usambara Mountains, Tanganyika Territory, September 1921.

The East African race of the black-collared barbet occurs in northern Tanganyika Territory, east of the Rift Valley, south as far as Ugogo, and north into the coastal and subcoastal areas of Kenya Colony (Samburu, Changamwe, Mombasa) to north of the lower Tana River (Witu, Lamu, etc.)

Van Someren[3] states that there is a tendency in birds from Kenya Colony to produce a greater expanse of black on the breast than in specimens from Tanganyika Territory, but I cannot confirm this.

The two birds from Bungu show a small amount of molt on the head and body; the one from Morogoro is in fine, fresh plumage.

[1] Nov. Zool., **29**, 1922, pp. 55–56.
[2] Kungl. Sv. Vet. Akad. Handlngr., 1911, p. 64.
[3] Nov. Zool., **29**, 1922, p. 56.

### Lybius zombae albigularis Neumann

*Lybius zombae albigularis* Neumann, Bull, Brit. Orn. Cl., **21**, 1908, p. 46: Songea.

1 ♂, 1 ♀, Lumbo, Mozambique, 11 July 1918.

"These barbets are not uncommon and one is able to locate them by the strange call which they give when performing their still more extraordinary courting antics." (A.L.)

These two specimens agree with the description of *albigularis*, which I have not otherwise seen; as they have no pink wash on the feathers of the head, throat, and breast. Neumann's original description is a little misleading as he writes that while birds from the Shire and Shirwa region (typical *zombae*) have this pinkish wash, in *albigularis* these parts are pure white, while what he undoubtedly meant was that the light tips to the feathers are white, the head, throat, and breast being black.

The present specimens constitute a very considerable extension of the known range of this barbet, the nearest previous records being from Mikindani, in southeastern Tanganyika Territory (recorded as *zombae* by Grote[1] about 300 miles to the north of Lumbo. For that matter, Songea, Mikindani, and Lumbo are the only localities from which *albigularis* has been recorded as far as I know. Fromm did not meet with it in southeastern Tanganyika Territory.

The measurenents of the pair collected are as follows: male—wing 82, tail 48, culmen 21.5 mm.; female—wing 83, tail 48, culmen 23 mm.

### Lybius melanopterus melanopterus (Peters)

*Pogonias* (*Laimodon*) *melanopterus* Peters, Ber. Akad. Wiss. Berlin, 1854, p. 134: Mocimboa, Mozambique.

1 ♀, Morogoro, Tanganyika Territory, 20 July 1917.
1 ♂ ?, Tindiga, Tanganyika Territory, 31 January 1922.

Recently Grote[2] has separated the birds from the northern part of the range of this barbet (southern Somaliland) from the typical form on the basis of slightly smaller size (wing length 86–91 mm., as against 91–99 mm., in typical birds). For the new, northern race he proposed

[1] Journ. f. Ornith., 1912, p. 523.
[2] Orn. Monatsb., **37**, 1929, no. 3, p. 75.

the name *didymus*. I have seen no Somaliland material and, until I have a chance to form my own opinion, follow Grote in this matter. The ranges of the two races then are:

1. *L. m. melanopterus:* Mozambique and Nyasaland, north through Uhehe and eastern Tanganyika Territory to the Kenya border.

2. *L. m. didymus:* the coastal belt of Kenya Colony north to southern Italian Somaliland. According to Grote, the birds inhabiting the region between Mombasa and Tanga are more or less intermediate.

The two specimens collected have wings of 93 and 95 mm., respectively, and are therefore clearly of the typical race. A male from Magogoni, however, has a wing length of only 88 mm., and is probably one of the intermediates referred to by Grote.

Van Someren[1] states that this barbet is a bird of the desert country and of low altitudes. He records specimens from Changamwe, Lake Jipe, Taveta, Teita, and Sagala Hills.

### Lybius bidentatus aequatorialis (Shelley)

*Melanobucco aequatorialis* Shelley, Ibis, 1889, p. 476: Hparo, that is, Umparu near Wadelai.

1 ♂, 1 ♀, Masomuntu Mukubwa, Ruanda, Uganda, 26 September 1919.
1 ♂, 1 ♀, Kabare, Bukoba, Tanganyika Territory, 13–15 January 1923.
2 ♂, 2 ♀, Chantwara, Bukoba, Tanganyika Territory, 1–2 January 1923.

I consider *aethiops* Neumann a valid, but not too well marked race.

The present form of this barbet occurs from Uganda to Ruanda, northwestern Tanganyika Territory and western Kenya Colony (Kibras, southeast Elgon, Kibos, Soy, and Fort Ternan).

This barbet lives in forest and scrub country where it nests in holes in trees. In Uganda breeding birds have been taken in June and July.[2]

The present series presents the following measurements:

males—wing 96.5–105.0; tail 73.5–80; culmen 30.5–32.5 mm.
females—wing 100.5–107.0; tail 75.5–82; culmen 29.0–32.0 mm.

[1] Nov. Zool., **29**, 1922, p. 55.
[2] cf. van Someren, Ibis, 1916, p. 235.

### Tricholaema hirsutum ansorgei Shelley

*Tricholaema ansorgei* Shelley, Bull. Brit. Orn. Cl., **5**, 1895, p. 111: Uganda, type in Brit. Mus. from Port Alice (that is, Entebbe).

1 ♂, Kitortu, Buddu, Uganda, 28 August 1919.
1 ♂, Mbugwe, Buddu, Uganda, 31 August 1919.

This barbet is known only from Uganda. It is a forest bird and apparently occurs only in fairly large forest areas, so the chance of its being discovered in the small wooded patches in Kenya Colony is rather slight. Gyldenstolpe[1] writes that he found this bird to be exclusively confined to the equatorial forest of the Congo basin, and absent in southwestern Ankole and in the Kivu district.

Van Someren[2] writes that females are yellower on the underparts than are males. However, the present two examples, both sexed as males, vary in this respect. The Mbugwe bird is greener below than the one from Kitortu. Gyldenstolpe also reports individual variation within the sexes in this respect.

The measurements of these two specimens are as follows: wing 88–90, tail 51–49, culmen 21–22 mm. (the first measurement in each case refers to the Kitortu specimen).

### Tricholaema melanocephalum stigmatothorax Cabanis

*Tricholaema stigmatothorax* Cabanis, Journ. f. Ornith., 1878, p. 205: Ndi, Teita district, Kenya Colony.

1 immature ♂, 1 adult ♀, Dodoma, Tanganyika Territory, 22 December 1918.

Sclater[3] gives the range of this barbet as "from the country round Lakes Rudolf and Stephanie south to the Kilimanjaro district." The present two specimens extend the known distribution to Dodoma, a distance of about 200 miles. They are not only the southernmost records of the species, but also the largest individuals I have seen, their measurements being as follows: male—wing 69, tail 40, culmen 17; female—wing 69, tail 42, culmen 18 mm. The largest of a fair series (11 specimens) from Kenya Colony has a wing 68 mm. long, and the majority have this member less than 66 mm. in length.

[1] Kungl. Sv. Vet. Akad. Handlngr., 1924, p. 238.
[2] Ibis, 1916, p. 236.
[3] Syst. Avium Ethiop., pt. 1, 1924, p. 275.

### Tricholaema lacrymosum lacrymosum Cabanis

*Tricholaema lacrymosa* Cabanis, Journ. f. Ornith., 1878, p. 205: Adi River, that is, Athi River, Kenya Colony.

1 ♂, 1 ♀, Morogoro, Tanganyika Territory, 11 July 1917.
1 ♀, Ilonga, Kilosa, Tanganyika Territory, 23 March 1923.

"Also Kilosa, Tanganyika Territory." (A.L.)

The typical race of the spotted-flanked barbet occurs, in our region, throughout Kenya Colony and in northern Tanganyika Territory, south as far as Kilosa and Morogoro, but not to Dodoma, where the form *ruahae* reaches its northern limit.

Both female specimens are molting the wing feathers and the feathers of the back.

### Tricholaema lacrymosum radcliffei Grant

*Tricholaema radcliffei* O.-Grant, Bull, Brit. Orn. Cl., **15**, 1904, p. 29: Mulema, Uganda.

2 ♂, 1 ♀, Kabare, Bukoba, Tanganyika Territory, 15–30 January 1923.

One of the males is subadult, and has the flank spots slightly elongated. In this respect it is intermediate between the typical race and the present one, but as the adults collected in the same locality are clearly *radcliffei*, it follows that the other is of this race as well. However, it should be remembered that the validity of *radcliffei* has been seriously questioned by several competent investigators, and it may be that a sufficient series would show the character of the shape of the spots to be variable non-geographically.

This is the race that replaces *lacrymosum* in Uganda and in extreme northwestern Tanganyika Territory.

Two of the birds are without tails.

### Tricholaema lacrymosum ruahae Neumann

*Tricholaema lacrymosum ruahae* Neumann, Bull. Brit. Orn. Cl., **21**, 1908, p. 47: Uhehe, southern Tanganyika Territory.

1 ♂, 1 ♀, Mahaka, Dodoma, Tanganyika Territory, 23–28 March 1922.

While with the Smithsonian-Chrysler Expedition, Loveridge collected a female spotted-flanked barbet at Dodoma, 25 July 1926 (now

in the United States National Museum) which agrees with the description of *ruahae*, has the underparts much whiter, less yellowish, than in *lacrymosum* or *radcliffei*, and has round spots.

Hitherto *ruahae* has been known only from the Uhehe district, the valleys of the Ruaha and Rufigi Rivers, so the Dodoma bird constitutes the northernmost record for the race and extends the known range northwestwards for approximately 100 miles.

The measurements of the specimens are—wing 68–70, tail 40–42, culmen 15–17.5, mm.

The two Mahaka specimens are now in the collection of the Academy of Natural Sciences at Philadelphia.

### Tricholaema diadematum diadematum (Heuglin)

*Laemodon diadematum* Heughlin, S B. Akad. Wien, 1856, p. 299 (nom. nud.).
*Pogonorhynchus diadematus* Heughlin, Ibis, 1861, pp. 124, 126, pl. v: Steppes of the Kitsch-Negroes, that is, Upper White Nile.

1 ♂, 1 ♀, Dodoma, Tanganyika Territory, 22 December 1918.

These two specimens agree absolutely with Ethiopian *diadematum* and cannot be considered aberrant individuals of *massaicum*, the race in whose range they were collected. They constitute the first records, for the race in Tanganyika Territory and extend the known range of *diadematum* southwards for approximately 750 miles. However, they must be either migrants or irregular wanderers, as two races (*mustum* and *massaicum*) occupy the intervening area.

### Tricholaema diadematum massaicum (Reichenow)

*Pogonorhynchus massaicus* Reichenow, Journ. f. Ornith., 1887, p. 59: Loeru, Tanganyika Territory.

While with the Smithsonian-Chrysler Expedition, Loveridge collected an immature male at Dodoma, 24 June 1926.

The subspecies *massaicum* is really nothing but a group of intermediates between *diadematum* and *mustum* of southern Ethiopia and northern Kenya Colony, and *frontatum* of Nyasaland, the Katanga, and Angola.

The immature male taken by the Smithsonian-Chrysler Expedition has the sides and flanks abundantly spotted, the middle of the breast and belly less so.

### Buccanodon leucotis kilimensis (Shelley)

*Smilorhis kilimensis* Shelley, Ibis, 1889, p. 477: Kilimanjaro district.

1 ♂, 2 ♀, Bungu, Usambara Mountains, Tanganyika Territory, September 1921.

Sclater[1] states that the type of this barbet (which is in the British Museum) is from Taveta. However, Shelley[2] lists three specimens, two of which, collected by Sir Harry Johnston on Mt. Kilimanjaro between 3,000–6,000 feet, are stated to be the types, while the third, taken by H. C. V. Hunter at Taveta, is probably the bird referred to by Sclater. Fortunately, this is a very minor matter as the Taveta and the Kilimanjaro birds are subspecifically identical.

A series of twelve specimens have wing lengths as follows: males 89.0–91.5 mm., females 89.5–95.0 mm.

This race is one of those birds found in the Usambara but not in the Uluguru Mountains, where it is replaced by *leucogrammicum*. In the Ibis for 1928 (p. 82) I wrote that it seemed quite likely that *kilimensis* would be found to occur in the Uluguru range, in which case it would be necessary to consider *leucogrammicum* and *kilimensis* specifically distinct. Since then, further study of the distribution of birds in tropical East Africa has caused me to reverse this opinion.

Mt. Kenya, Embu, Meru, and Mau areas are inhabited by a dark-rumped form *kenyae* Bowen.

### Buccanodon olivaceum olivaceum (Shelley)

*Barbatula olivacea* Shelley, Ibis, 1880, p. 334, pl. vii: Rabai, near Mombasa, Kenya Colony.

2 ♀, Uluguru Mountains, Tanganyika Territory, 18 May 1921.

"Also Bagilo and Bungu. Supposed to be rare but by no means uncommon in the Usambara and Uluguru Mountains." (A.L.)

The green barbet is peculiar in its distribution. It occurs in the Uluguru and Usambara Mountains in Tanganyika Territory, and again in the Rabai Hills near Mombasa, just across the boundary in Kenya Colony. It definitely does not occur on Kilimanjaro, and is one of the prominent differences between the avifauna of that great

[1] Syst. Avium Ethiop., pt. 1, 1924, p. 279.
[2] Cat. Birds Brit. Mus., **19**, 1891, p. 37.

mountain and of the Usambara and Uluguru ranges. The latter two mountain masses are its real home, as in the Rabai Hills the bird is scarce, and it is unfortunate that the latter place, some distance removed from the main part of the range, should be the type locality. Van Someren[1] did not have any specimens when he wrote his 1922 paper and states that, " . . . this species . . . appears to be rare, very few specimens having been collected."

A series of 15 specimen show no differences between Uluguru and Usambara birds.

### Buccanodon duchaillui (Cassin)

*Barbatula duchaillui* Cassin, Proc. Acad. Phila., for 1855 (1856) p. 324: Moonda River, Gaboon.

1 ♀, Mbugwe, Budu, Uganda, 30 November 1919.

The form *ugandae* Reichenow is not separable. I have compared two Uganda birds with seven from Cameroon and one from Liberia and can find no differences. I have seen no material from the French Congo and so cannot form an opinion as to the validity of *gabriellae* Bannerman. Van Someren[2] writes that the birds of the Kisumu and southern Kavirondo districts are larger than Uganda specimens. More material is needed before an East African race can be established.

In the region covered by this collection, the yellow-spotted barbet occurs only in Uganda and the Kavirondo country from Kisumu southwards. The species has never been recorded from Mt. Elgon, or from Ruanda, Urundi, or northwestern Tanganyika Territory.

### Viridibucco simplex leucomystax (Sharpe)

*Barbatula leucomystax* Sharpe, Ibis, 1892, p. 310: Sotik, Kenya Colony.

1 ♀, Uluguru Mountains, Tanganyika Territory, 11 May 1921.
1 ♂, Bagilo, Uluguru Mountains, Tanganyika Territory, 15 May 1922.

A specimen collected in a wooded ravine on the lower slopes of the Uluguru Mountains at Morogoro has been referred to the typical form, *V. simplex simplex*, by van Someren.[3] This is probably a mistake as the above listed birds are clearly *leucomystax*. Still it may be that in

[1] Nov. Zool., **29**, 1922, p. 58.
[2] Nov. Zool., **29**, 1922, p. 58.
[3] Nov. Zool., **29**, 1922, p. 59.

the Uluguru district the typical coastal race occurs in the lowlands as at Morogoro, while the inland form lives higher up in the mountains.

This bird is uncommon almost everywhere in its range. Because of the small number of specimens in American museums, I append the measurements of these two:

male—wing 55, tail 31.5, culmen 11 mm.
female—wing 57, tail 31.5, culmen 11.5 mm.

Grote[1] records the wing length of 32 specimens from the Usambara Mountains as 52–57 mm., the majority around 53 mm.

### Pogoniulus pusillus affinis (Reichenow)

*Barbatula affinis* Reichenow, Orn. Centralb., 1879, p. 114: Kipini, mouth of the Tana River.

1 ♂, 1 ♀, Dar es Salaam, Tanganyika Territory, 7 June 1918.

"This is quite a common bird in Dar es Salaam gardens." (A.L.)

These two specimens are paler, more whitish, less olive-buffy below than seven from Kenya Colony. The female is lighter, than the male. They are also smaller than the Kenya birds, having wings only 50 mm., in length as against 52–58.5 mm., in the Kenyan series.

The male has some of the light occipital streaks yellowish instead of white; the female has them all white.

Sclater[2] states the range of this tinker-bird to extend west to Victoria Nyanza. It really extends into Uganda (at least northern Uganda) as well. Van Someren[3] records it from Mt. Moroto and the Kerio River.

### Pogoniulus leucolaima nyansae (Neumann)

*Barbatula leucolaima nyansae* Neumann, Journ. f. Ornith., 1907, p. 347: Bukoba.

1 ♂, Kabare, Bukoba, Tanganyika Territory, 28 January 1923.

This tinker bird is chiefly West African in range, the present form being its easternmost representative. *P. l. nyansae* occurs in the low country west of Victoria Nyanza, and Uganda. Sclater[4] following

[1] Journ. f. Ornith., 1921, p. 124.
[2] Syst. Avium Ethiop., pt. 1, 1924, p. 280.
[3] Nov. Zool., **29**, 1922, p. 60.
[4] Syst. Avium Ethiop., pt. 1, 1924, p. 282.

Bannerman[1] considers *mfumbiri* O.-Grant a synonym of *nyansae* and gives the range of the latter as including Ruwenzori and the Kivu highlands. However, Gyldenstolpe[2] states that *mfumbiri* is distinct from both *leucolaima* and *nyansae* and is the form inhabiting the mountain regions of Central Africa (Kivu Volcanoes, Ruwenzori, Ankole, and w. Mpororo). Gyldenstolpe writes that *mfumbiri* differs from *nyansae* in having the underparts duller, more greenish, less yellowish than the latter. I have seen two specimens from Ruanda which differ from the present Bukoba bird and uphold Gyldenstolpe's characterization of *mfumbiri* to which race I refer them. The birds of central Ankole are, as might be expected, intermediate in coloration. Thus, of two specimens taken together by J. C. Phillips one is more like *nyansae*, while the other is nearer to *mfumbiri*.

The measurements of the single specimen collected are as follows: wing 55, tail 29, culmen 13 mm.

### Pogoniulus leucolaima mfumbiri (Ogilvie-Grant)

*Barbatula mfumbiri* Ogilvie-Grant, Bull. Brit. Orn. Cl., **19**, 1907, p. 107: Mfumbiro Volcano, north of Lake Kivu.

1 ♂, Masomuntu Mukubwa, Ruanda, Uganda, 26 September 1919.
1 ♂, "Uganda," almost certainly British Ruanda, 1 November 1919.

The Label on this last specimen had become detached in transit and the date seems questionable for the collectors were at Mbugwe, Budu, Masaka district, Buganda Province on November 1. (A. L.)

As already mentioned in the discussion of *nyansae*, I agree with Gyldenstolpe in recognizing this subspecies. The specimens have the following measurements: wing 55, 56; tail 30, 30.5; culmen 13.5, 13.0 mm. Both birds are in fresh plumage.

### Pogoniulus bilineatus alius Friedmann

*Pogoniulus bilineatus alius* Friedmann, Auk, 1930, p. 86: Nairobi, Kenya Colony.

1 ♀, Ngong Forest, near Nairobi, Kenya Colony, 28 July 1919.
1 ♂, 1 ♀, Tumutumu, Kenya Colony, 15 October 1920.

[1] Rev. Zool. Afr., **10**, 1922, pp. 108–110.
[2] Kungl. Sv. Vet. Akad. Handlngr., 1924, pp. 241–242.

Van Someren[1] lists birds from Nairobi, Kyambu, and Naivasha as "*Barbatula bilineata*? subsp. nov." and states that they are smaller and darker than typical *jacksoni* which he restricts to the country from Molo north to Kakamega and Mt. Elgon. Granvik[2] considers Nairobi birds *jacksoni* and those from Mt. Elgon typical *bilineatus* in spite of the fact that the latter was described from Natal! However, he does state that his Elgon specimens are slightly larger and have the edges of the wing feathers lighter yellow than in South African birds. It seems that, whatever the names involved are or ought to be, the birds of the Kikuyu-Ukamba country are different from those of the region to the west of the Rift Valley. As I have elsewhere shown, *jacksoni* is the form of the Elgon-Kaimosi region, and *alius* is the race found east of the Rift Valley.

The wing lengths of the three specimens collected are as follows: male, Tumutumu, 53; female, Tumutumu, 56; female, Ngong, 55.5 mm.

### Pogoniulus bilineatus conciliator Friedmann

*Pogoniulus bilineatus conciliator* Friedmann, Proc. N. Eng. Zool. Soc., **11**, 1929, p, 36: Nyange, Uluguru Mountains.

1 ♂, Uluguru Mountains, Tanganyika Territory, 22 May 1921.

When reporting on the collection which contained the type of this recently described race, I referred it to the coastal form, *fischeri*[3] as at the time I lacked the material necessary for a critical determination. In that paper there occurs an unfortunate typographical error to which attention may here be called. To judge from the text in that paper, it would appear that *nyanzae* was considered conspecific with *fischeri*, but for *B. b. nyanzae* the wording should read *B. l. nyanzae*, as the form implied is, of course, a race of the distinct, though closely allied species, *lcucolaima*.

*P. b. conciliator* is, as its name suggests, an intermediate between its eastern and northern representatives, *fischeri* and *jacksoni*. So far, it is known only from the Uluguru range of mountains.

The measurements of this specimen (a paratype) are: wing 53, tail 26, culmen 14 mm.

[1] Nov. Zool., **29**, 1922, p. 59.
[2] Journ. f. Ornith., 1923, Sonderheft, pp. 90–91.
[3] cf. Ibis, 1928, p. 82.

### Pogoniulus bilineatus fischeri (Reichenow)

*Barbatula fischeri* Reichenow, Orn. Centralb., 1880, p. 181: no locality: Zanzibar (*vide* Journ. f. Ornith., 1885, p. 125).

In his manuscript notes on his collection, Loveridge records a specimen of this barbet taken at Mombasa, and since deposited in the Nairobi Museum. I have seen a specimen from Mombasa and have compared it with a series of topotypical Zanzibar birds, and find it to be exactly like them.

### Pogoniulus scolopaceus aloysii (Salvadori)

*Xylobucco aloysii* Salvadori, Bull. Mus. Zool. Anat. Torino, **21**, no. 542, 1906, p. 2: near Entebbe, Uganda.

1 ♀, Masaka, Uganda, 25 August 1919.

This race of the speckled tinker-bird is the easternmost representative of its species, and occurs from the Eastern Belgian Congo through Uganda into Kenya Colony, as far east as Naivasha. The present specimen agrees with others from the Beni-Irumu forest, eastern Ituri district, Belgian Congo. The bird was in molt when collected, the ecdysis being most prominent on the throat and breast.

Van Someren[1] writes that this barbet frequents the forest, scrub, and thorn-bush country. Nests have been found in May and December in Uganda.

### Trachyphonus vaillantii suahelicus Reichenow

*Trachyphonus suahelicus* Reichenow, Journ. f. Ornith., 1887, p. 60: Usegua, Tanganyika Territory.

1 ♂, 1 ♀, Lumbo, Mozambique, 15 July 1918.

"Also Morogoro and Kilosa." (A.L.)

The present two specimens show considerable variation in color. The light spots on the black throat band are white in the male, pale rosy pink in the female. The former bird has the red on the forehead, crown, and sides of the head darker, more crimson, less scarlet, and the yellow of the underparts brighter than the latter. Both are in good, fairly fresh plumage. The wing lengths are 97 mm., in the male, 96 mm., in the female.

[1] Ibis, 1916, p. 237.

Grote[1] has described the bird of the interior of Tanganyika Territory as *suschkini* (type locality, Tabora) on the basis of larger size (wing 100–104 mm.). The race *suahelicus* is then limited to the coastal belt in Tanganyika Territory as far north as the Pangani River. A bird from Magogoni is typical *suahelicus*. The two races appear to intergrade in the region between the north end of Lake Nyasa and the southern reaches of the Uhehe highlands. The Morogoro and Kilosa birds are probably referable, then, to *suschkini*.

### Trachyphonus darnaudii emini Reichenow

*Trachyphonus emini* Reichenow, Journ. f. Ornith., 1891, pp. 149, 209: Mpwapwa, Tanganyika Territory.

1 ♂, 1 ♀, Dodoma, Tanganyika Territory, 5 December 1918.

"Also Kinyambwa and Pooma. Very abundant at Dodoma where one was found with its egg and a young one in a hole in a thorn tree on December 5th, 1918." (A.L.)

While with the Smithsonian-Chrysler Expedition, Loveridge collected 3 males and 3 females at Dodoma, 15–21 June 1926. One of the females has a deformed bill; the mandible is normal, the maxilla very long and sickle-shaped, the culmen 28 mm., long (chord).

As has been pointed out by van Someren,[2] this form is entirely distinct from *T. darnaudii*, and Claude Grant was mistaken in figuring *emini* as the female of that bird.[3]

This barbet appears to be wholly restricted to Tanganyika Territory, where it occurs from the north end of Lake Nyasa north to Wembere Steppes and the Dodoma district. It is commoner in the northern part of its range than in the southern part.

Both specimens have wings 81 mm. long.

## Family INDICATORIDAE. Honey-guides

### Indicator indicator (Sparrman)

*Cuculus indicator* Sparrman, Phil. Trans., **67**, 1777, p. 43, pl. i: Great Fish River, near Somerset East, Cape Province.

[1] Ornith., Monatsb., 1929, p. 76.
[2] Nov. Zool., **29**, 1922, p. 61.
[3] Ibis, 1915, p. 449, pl. v.

1 ♀, Kilosa, Tanganyika Territory, 30 December 1920.
1 immature ♂, Kilosa, Tanganyika Territory, 21 January 1921.
1 ♂, Kome Island, Mwanza, Tanganyika Territory, 24 November 1922.
1 ♀, Msimba, Kilosa, Tanganyika Territory, 27 March 1923.
1 immature ♀, Ilonga, Kilosa, Tanganyika Territory, 31 March 1923.
1 ♂, Kipera, Kilosa, Tanganyika Territory, 5 May 1923.

"Also Nanyuki, West Kenya. Very common at Kilosa where bees are also numerous." (A.L.)

While with the Smithsonian-Chrysler Expedition, Loveridge collected an immature male at Dodoma, 23 June 1926.

The immature female is quite young; it has not begun to molt into adult plumage. The young male, however, is fairly advanced in the postjuvenal molt; the yellow feathers of the chin and throat are gone and black ones coming in, and the upperparts are likewise molting extensively. The upper tail coverts and rump feathers are new (with black median streaks), and the yellow shoulder patch is beginning to show.

This honey-guide is widely distributed throughout our region, except in heavily forested areas, and is fairly numerous in most places.

### Indicator variegatus variegatus Lesson

*Indicator variegatus* Lesson, Traité, 1831, p. 155: Africa.
1 ♂, Kabare, Bukoba, Tanganyika Territory, 16 January 1923.

As far as I have been able to ascertain, this is the first record for the species in the Bukoba district. Ogilvie-Grant[1] when reporting on the results of the Ruwenzori Expedition, recorded specimens taken at 110–130 miles west of Entebbe (4,000 feet). These are the nearest records to the Bukoba bird that I can find to the north, while Grauer's bird from Sultanat Kissaka is the nearest one to the south.[2]

This honey-guide is more of a forest-haunting species than *l. indicator* and consequently is very much more local in its distribution. It seems to be really common nowhere, but single birds, or pairs, are to be found in wooded areas throughout its range, which includes all of the territory under discussion in this paper.

The measurements of the specimen are—wing 110, tail 69, culmen 12.5 mm. The bird is in clean, fresh plumage; the crown is black, the feathers bordered with grayish white, with no olive tinge.

[1] Trans. Zool. Soc. Lond., **19**, pt. 4, 1910, p. 414.
[2] cf. Sassi, Ann. K. K. Naturhist. Hofmus. Wien, **26**, 1912, p. 381.

### Indicator minor teitensis Neumann

*Indicator minor teitensis* Neumann, Journ. f. Ornith., 1900, p. 195: Teita, Kenya Colony.

1 ♀, Ngong Forest, Kenya Colony, 18 July 1919.

It seems not unlikely that this honey-guide is uncommon in the Ngong Forest, as van Someren[1] does not record it from there in spite of the fact that he and his native assistants collected very extensively in that forest, which is only a few miles from the city of Nairobi.

The present specimen is rather small, having a wing length of only 82 mm.

### Prodotiscus insignis reichenowi Madarasz

*Prodotiscus reichenowi* Madarasz, Ann. Mus. Nat. Hung. **2**, 1904, p. 206: Moshi Mountain, Kilimanjaro group.

1 ♀, Bungu, Usambara Mountains, Tanganyika Territory, September 1921.

This specimen is the second one known from Tanganyika Territory (the other being the type) and constitutes the most southern record for the race. Sclater[2] states that *reichenowi* is known only from the type, although van Someren[3] records seven birds from Nairobi and Kyambu, these being the only Kenyan records known, and constituting the northern limits of the known range of the bird. However, Sclater[4] records *ellenbecki* from Nairobi, so van Someren's birds may be *ellenbecki*.

I have compared this specimen with the colored plate of *ellenbecki*[5] and find the characters of *reichenowi* to hold (that is, the top of the head only, and not the nape, grayish-brown, while in *ellenbecki*, the nape, as well as the crown, is grayish brown. Madarasz[6] gives the measurements of the type, a male, as—wing 73, tail 53, culmen 10 mm. The present individual, a female, has the following measurements—wing 68, tail 47, culmen 9 mm. This difference is rather more than might be expected even though the males of honey-guides are usually larger than the females.

[1] Nov. Zool., **29**, 1922, p. 53.
[2] Syst. Avium Ethiop., pt. 1, 1924, p. 292.
[3] Nov. Zool., **29**, 1922, p. 54.
[4] *loc. cit.*
[5] Journ. f. Ornith., 1905, pl. xiii.
[6] *cit. supra.*

## Family PICIDAE. Woodpeckers

### Campethera taeniolaema hausburgi Sharpe

*Campothera hausburgi* Sharpe, Bull. Brit. Orn. Cl., **10**, 1900, p. 36: Mt. Kenya.

1 ♂, 1 ♀, Ngong Forest near Nairobi, Kenya Colony, 19 July 1919.

Sclater[1] does not mention *hausburgi* and apparently considers it a synonym of *taeniolaema*, but van Someren[2] supports the validity of the race from the east of the Rift Valley, and Granvik[3] while "lumping" *hausburgi* and *taeniolaema*, inadvertently states that his specimen from the range of the former has the characters ascribed to that form.

*C. t. hausburgi* differs from the nominate subspecies in being brighter green above with a yellowish tinge; in being more finely barred below, especially on the cheeks and throat, and in having a yellowish wash on the breast and belly. The size differences once supposed to distinguish the two forms do not hold. The present birds have the following dimensions: ♂, wing 107, tail 67, culmen 24 mm.; ♀, wing 106.5, tail 67.5, culmen 22 mm.

### Campethera nubica nubica (Boddaert)

*Picus nubica* Boddaert, Tabl. Pl. Enlum. p. 41, 1783: Nubia (ex Pl. Enlum. no. 667).

1 immature ♂, Mukando, Ruanda, Uganda, 20 September 1919.
1 ♂, 1 ♀, Sagayo, Mwanza, Tanganyika Territory, 1 November 1922.
1 adult ♂ (= ♀), Kome Island, Mwanza, Tanganyika Territory, 25 November 1922.

The two birds from Sagayo are in very worn plumage and fit the description of the so-called race, *neumanni*, which is, in my opinion, not valid, although apparently considered so by van Someren.[4] The characters of *neumanni* are those of abrasion. The Sagayo female is molting the rectrices.

The Nubian woodpecker occurs in the region under discussion, throughout Kenya Colony (except the arid coastal belt and the Jubaland district to the Northern Guaso Nyiro and the Tana River), Uganda, Ruanda, and northern Tanganyika Territory from the Mwanza area eastwards to the Dodoma region, east of which it merges with the paler form, *pallida*.

[1] Syst. Avium Ethiop. pt. 1, 1924, p. 294.
[2] Nov. Zool., **29**, 1922, p. 65.
[3] Journ. f. Ornith., 1923, Sonderheft, p. 93.
[4] Nov. Zool., **29**, 1922, p. 62.

### Campethera nubica pallida (Sharpe)

*Dendromus pallidus* Sharpe, Ibis, 1902, p. 638: Lamu, Kenya Colony.

1 immature ♂, Kilosa, Tanganyika Territory, 11 January 1921.

A specimen taken by Loveridge at Morogoro, Tanganyika Territory, in 1919 has been referred to this race by van Someren. This and the above are the southernmost records known.

Sclater[1] states the range of *pallida* to be "Somaliland and Gallaland south to the Tana River." Two years earlier, however, van Someren[2] wrote that it occurred as far as the country east of Kilimanjaro, while as long ago as 1904, Neumann[3] recorded a bird from Mpwapwa, Tanganyika Territory, as intermediate between *nubica* and *pallida*.

### Campethera scriptoricauda (Reichenow)

*Dendromus scriptoricauda* Reichenow, Orn. Monatsb., 1896, p. 131: Lamu, Kenya Colony.

1 ♂, Morogoro, Tanganyika Territory, 20 August 1917.
1 ♀, Kilosa, Tanganyika Territory, 26 January 1921.

Sclater[4] gives Bumi, Tanganyika Territory, as the type locality for this species. However, in the original description, Reichenow definitely states that he is renaming the bird from Lamu, recorded by Hargitt in the Ibis for 1883, p. 455, and in the Catalogue of Birds in the British Museum, **18**, p. 102. It follows therefore that that specimen must be the type and Lamu, Kenya Colony, the type locality.

*Dendromus aureicuspis* Reichenow[5] is a synonym as Sclater suggests. However, it is an open question whether *albifacies* Gunning and Roberts[6] is also a synonym. It may be a valid race.

The range of this species (including *albifacies*) is as follows: the coastlands of Kenya Colony from Lamu to Mombasa, the eastern portion of Tanganyika Territory (inland to Morogoro and Kilosa), southern Nyasaland, and Mozambique to the Boro district.

The sequence of plumages (especially the changes in the feathering

[1] Syst. Avium Ethiop., pt. 1, 1924, p. 295.
[2] Nov. Zool., **29**, 1922, p. 63.
[3] Journ. f. Ornith., **52**, p. 394.
[4] Bull. Brit. Orn. Cl., **46**, 1925, p. 14.
[5] Orn. Monatsb., 1915, p. 26: Usagara.
[6] Ann. Trans. Mus., **3**, p. 112, 1911: Villa Pereira, Boror.

of the top of the head) is similar to that in *C. nubica.* The young males have red only on the occiput and nape, the forehead and crown being black with small white spots, and the malar stripe black and white.

### Campethera cailliautii cailliautii (Malherbe)

*Chrysopicos cailliautii* Malherbe, Rev. Mag. Zool., 1849, p. 540: Africa; Mombasa, *apud* C. Grant, Ibis, 1915, p. 454.

1 ♂, Dar es Salaam, Tanganyika Territory, 3 July 1918.
1 ♂, Kilosa, Tanganyika Territory, 2 February 1921.
1 ♂, Uluguru Mountains, Tanganyika Territory, 1 June 1921.

"Also Morogoro, Bungu, and Mombasa." (A.L.)

*Campethera loveridgei* Hartert[1] is a synonym. Hartert[2] writes that *loveridgei,* " . . . only differs from *C. c. cailliautii,* with the designated type locality Mombasa . . . in being slightly more greenish above and below and in having the round breast spots larger . . . " A specimen from the Tana River, Kenya Colony (the northernmost record for the species, F. R. Wulsin coll.) which, on geographical grounds must be considered *cailliautii,* exactly reverses these characters. Otherwise all the above birds would be *loveridgei.* Van Someren[3] writes that Dar es Salaam birds are more heavily spotted below than typical *cailliautii.* More material is needed before *loveridgei* can be accepted as a valid race.

Sclater[4] gives the range of this woodpecker as "Island of Zanzibar and adjacent mainland from Mombasa to Dar es Salaam." As already shown, the bird occurs north to the Tana River.

### Campethera cailliautii fülleborni (Neumann)

*Dendromus malherbei fülleborni* Neumann, Journ. f. Ornith., 1900, p. 204: Langenburg, (*i.e.* Manda) n. e. of Lake Nyasa.

Loveridge collected a male at Lumbo, Mozambique, in August, 1918. This specimen, now in the Nairobi Museum, and which I have not examined, was determined by Dr. van Someren and listed by him.[5]

[1] Bull. Brit. Orn. Cl., **40**, 1920, p. 139: Morogoro.
[2] Nov. Zool., **32**, 1925, p. 149.
[3] Nov. Zool., **29**, 1922, p. 64.
[4] Syst. Avium Ethiop., pt. 1, 1924, p. 295.
[5] Nov. Zool., **29**, 1922, p. 64.

### Campethera abingoni suahelica (Reichenow)

*Dendromus chrysurus suahelicus* Reichenow, Vög. Afr. **2**, 1902, p. 175: Great Arusha, Tanganyika Territory.

1 ♂, 1 ♀, Morogoro, Tanganyika Territory, 20 August 1917.
1 ♀, Kilosa, Tanganyika Territory, 2 February 1921.
1 ♂, Uluguru Mountains, Tanganyika Territory, 13 May 1921.

"Also Lumbo, Mozambique." (A.L.)

Van Someren[1] refers a specimen collected by Loveridge at Lumbo, Mozambique, to *suahelica*, but according to the most recent reviewer of the races of this species[2] the typical, southern *abingoni* occurs from Natal to the Lake Nyasa region. However, Grote[3] records *suahelica* from Marunga, lower Rovuma River, so it appears that the range of this form may extend southwards along the coast in Mozambique while the nominate form occurs in the interior north to Nyasaland.

The birds from Kilosa and the Uluguru Mountains are in molt in the wings and tail; the other two are not, but the Morogoro male is in fresh plumage while the female is worn.

Recently van Someren[4] obtained topotypical examples of *suahelica* and found that Lumbo birds, while of this race, are paler throughout and are probably near *annectens* Neumann. Vincent[5] writes that *abingoni* and *annectens* intergrade in the Tete Province of Mozambique.

### Campethera abingoni mombassica (Fischer and Reichenow)

*Picus* (*Campothera*) *mombassicus* Fischer and Reichenow, Journ. f. Ornith.' 1884, p. 262: Mombasa (*vide* Journ. f. Ornith., 1878, p. 254).

1 ♂, Mombasa, Kenya Colony, 17 May 1918.

This race is characterized by having only very small, rather indistinct, light spots on the back and upper wing coverts, and also by the olive-brownish bases of the red feathers on the top of the head. It inhabits the coastal strip of East Africa from Mombasa north to southern Italian Somaliland.

[1] Nov. Zool., **29**, 1922, p. 63.
[2] Neumann, Bull. Brit. Orn. Cl., **21**, 1908, pp. 95–96.
[3] Journ. f. Ornith., 1912, p. 523.
[4] Nov. Zool., **37**, 1932, p. 282.
[5] Ibis, 1935, p. 19.

The single specimen collected is molting on the crown and the tail. Its dimensions are as follows—wing 107.0, tail 67.5, culmen—(broken).

I have seen no material of *C. a. kavirondensis* van Someren[1] but its supposed characters (wider black streaks on breast and belly, and a fusion of the throat streaks to form a wedge-shaped patch extending from the chin to the upper breast) do not sound very convincing, especially as the four specimens of *suahelicus* in the present collection vary in the width of the black streaks.

Moreau[2] has recently recorded *mombassica* from Lyamungu, Albizzia forest, within 40 miles of the type locality of *suahelicus!*

### Dendropicos lafresnayi lepidus (Cabanis and Heine)

*Ipoctonus lepidus* Cabanis and Heine, Mus .Hein. **4**, pt. 2, 1863, p. 118: Ethiopia.

1 ♀, Ndeza, Ankole, Uganda, 7 September 1919.
1 ♀, Chantwara, Bukoba, Tanganyika Territory, 29 December 1922.
1 ♂, Kabare, Bukoba, Tanganyika Territory, 15 January 1923.

This race is smaller and less noticeably barred above than its eastern neighbor *hartlaubii*. However, the dorsal barring color pattern is more pronounced in young than in old birds within the subspecies. *D. l. lepidus* ranges from western and southwestern Ethiopia and the Bahr el Ghazal through Uganda from the Congo border to western Kenya Colony and northwestern Tanganyika Territory, east to the Rift Valley. Sclater[3] writes that it occurs from Uganda to Kenya Colony, " . . . east of the Rift Valley," but he doubtlessly meant, "east to the Rift Valley."

The Ndeza bird is molting the wings.

The two females have wings 81 mm. in length; the male, 85.5 mm.

### Dendropicos lafresnayi hartlaubii Malherbe

*Dendropicos hartlaubii* Malherbe, Rev. Mag. Zool., 1849, p. 532: Zanzibar.

2 ♂, 1 ♀, Morogoro, Tanganyika Territory, 27 July–23 August 1917.
1 ♂, Ilonga, Kilosa, Tanganyika Territory, 23 March 1923.

"Also Dodoma, Tanganyika Territory, and Lumbo, Mozambique." (A.L.)

[1] Bull. Brit. Orn. Cl., **47**, 1927, p. 70: Lolgorien, S. Kavirondo.
[2] Proc. Zool. Soc., London, 1935, p. 873.
[3] Syst. Avium Ethiop., pt. 1, 1924, p. 298.

Van Someren[1] erroneously refers birds from Morogoro and Lumbo (collected by Loveridge) to *Dendropicos fuscescens centralis*, but they really are *D. lafresnayi hartlaubii! D. f. centralis* is not a recognizable form, but a synonym of *massaicus*. This misidentification is probably the cause of van Someren's statements about *centralis* that, " . . . These birds differ so markedly from *D. f. massaicus* that I am compelled to recognize them as distinct. They are more distinct from *D. f. fuscescens* than '*massaicus*' is from the typical bird . . . " In a more recent paper[2] he gives further details, which should be consulted.

The distribution of *hartlaubii* is as follows: the coastal districts of East Africa from Lamu and Mombasa to Mozambique, including the island of Zanzibar. It does not appear to occur inland very far in the north, the Morogoro, Kilosa, and Dodoma records being the western-most records for northern Tanganyika, but in the southern part of that country it ranges to Iringa and the Uhehe country to the north end of Lake Nyasa, and even into Nyasaland. Lynes[3] gives its range as Tanganyika Territory and Mozambique, but mentions Vincent's Nyasaland birds as being of this race as well.

### Thripias namaquus intermedius Grant

*Thripias namaquus intermedius* C. Grant, Bull. Brit. Orn. Cl., **35**, 1915, p. 101: Ugogo, Tanganyika Territory.

1 ♂, Morogoro, Tanganyika Territory, 23 August 1917.
1 ♀, Morogoro, Tanganyika Territory, 17 September 1917.
1 ♂, 1 ♀, Kilosa, Tanganyika Territory, 22 January 1921.

Sclater[4] casts some doubt on the validity of *intermedius*, and the present four birds confirm his suspicions, but for the present I hesitate to put it into the synonymy of *namaquus* because some of the specimens are nearer to *schoensis*. In general coloration the birds called *intermedius* by Grant resemble the typical South African race, but they are said to agree with *schoensis* in having the black auricular patch extending caudally beyond the ear-coverts, and more or less connected with the lateral throat stripes. The male from Morogoro has the auricular and throat stripes connected as in *schoensis*, the other three specimens lack an actual connection between these marks, but

[1] Nov. Zool.**29**, , 1922, p. 68.
[2] Nov. Zool., **37**, 1932, p. 283.
[3] Journ. f. Orn., **82**, 1934, Sonderheft, pp. 68–69.
[4] Syst. Avium Ethiop., pt. 1, 1924, p. 301.

they have the auricular stripe more posteriorly extended than in South African birds.

The two Kilosa birds are in molt.

The present race occurs throughout the northern half of Tanganyika Territory, southern Ukamba, Teita, and Kikuyu districts, Kenya Colony, and southwestern Uganda.

The island of Zanzibar is inhabited by a grayer, less greenish form, *T. n. decipiens.*

Van Someren[1] suggests that *decipiens* is the form of Southern Kenya Colony inland to Nairobi, but he does so on the assumption that *intermedius* is not constantly different from it, but the material examined in the present study upholds the distinctness of *intermedius*.

### Mesopicos goertae centralis Reichenow

*Mesopicos goertae centralis* Reichenow, Orn. Monatsb., 1900, p. 59: Ndussuma, west of Lake Albert.

1 ♀, Kabare, Bukoba, Tanganyika Territory, 15 January 1923.

This specimen, the first to be recorded from Tanganyika Territory, is not typical *centralis* but somewhat intermediate between that form and *rhodeogaster.* It is, however, nearer to the former race and is therefore referred to *centralis.* The specimen is subadult, has the flanks, abdomen, and under tail-coverts barred and the whole underparts washed with light yellowish green. The red feathers in the mid ventral area are not well developed and are lighter, more orange, in color than in adults. The upper back is duskier, less golden, than in *rhodeogaster,* slightly brighter yellow than in typical *centralis.*

The range of this subspecies is Uganda west to the Niam Niam country in the eastern Belgian Congo, and south to Bukoba, on the Uganda-Tanganyika border.

Hartert[2] writes that *centralis* and *poicephalus* should be united, and Sclater[3] writes that the former is doubtfully distinct from the latter, but lists both races. I find (with very small series) that the two are separable, the western *poicephalus* being lighter below than the Central African *centralis,* just as do Sclater and Praed.[4] However, the chances are that longer series would reverse this, as Neumann, Grant, Hartert,

[1] Nov. Zool., **37**, 1932, p. 283.
[2] Nov. Zool., **23**, 1921, p. 103.
[3] Syst. Avium Ethiop., pt. 1, 1924, p. 302.
[4] Ibis, 1919, p. 633.

and others have maintained. Yet, in accordance with my policy of agreeing with the arrangement of the Systema Avium Ethiopicarum in all cases where I cannot definitely decide to the contrary, I accept the two forms.

### Mesopicos goertae rhodeogaster (Fischer and Reichenow)

*Picus* (*Mesopicos*) *rhodeogaster* Fischer and Reichenow, Journ. f. Ornith., 1884, p. 180: Masailand, that is, northern Tanganyika Territory.

1 ♂, 1 ♀, Nairobi, Kenya Colony, 1 August–28 September 1920.

This race is a dark, brightly colored form with the maximum development of red on the middle of the abdomen (in which character it is equalled only by *spodocephalus*), the brightest, most golden, yellow on the upper back of all the subspecies, and with the grayish underparts without a greenish wash (as is present in *spodocephalus*, *abessinicus*, and *centralis*). It occurs in southern Kenya Colony (Simba to Kisumu) and in northern and western Tanganyika Territory.

### Mesopicos griseocephalus kilimensis Neumann

*Mesopicos griseocephalus kilimensis* Neumann, Orn. Monatsb., **34**, 1926, p. 80: Mountain forests of Kilimanjaro.

1 ♀, Uluguru Mountains, Tanganyika Territory, 11 May 1921.

The Uluguru Mountains appear to be the southernmost locality from which this woodpecker has been reported. The present specimen is the second one known from there (actually the first one collected), the other being a male taken at Nyingwa, Uluguru Mountains, 19 October 1926, by Arthur Loveridge, and reported on as *M. g. griseocephalus*.[1] The total known range is very limited (Kilimanjaro to the Uluguru). Not recorded from the Usambara Mountains.

Recently Lynes[2] has recorded specimens from Njombe forest, near the north end of Lake Nyasa, as "near *kilimensis*," which would constitute a notable extension of range. However, it may be asked if these birds are not wrongly named. Moreau[3] calls Usambara Mountain specimens typical *griseocephalus*, and Bangs and Loveridge[4] identify birds from the Uzungwe Mountains as *ruwenzori* Sharpe.

[1] Friedmann, Ibis, 1928, p. 83.
[2] Journ. f. Orn., **82**, 1934, Sonderheft, p. 70.
[3] Proc. Zool. Soc. Lond., 1935 (1936), pp. 873–874.
[4] Bull. Mus. Comp. Zool., **75**, 1933, p. 182.

### Jynx ruficollis coseni Grant

*Jynx ruficollis coseni* Grant, Bull. Brit. Orn. Cl., **35**, 1915, p. 102: Amala River, Kenya Colony.

2 ♂, Nairobi, Kenya Colony, 17 August 1920.

Cosen's red-breasted wryneck is similar to the typical South African subspecies, but is larger, wings 94–101 mm., as against 90–95 mm. The present two specimens are small for their race, having wings 95 mm. long. Van Someren[1] has pointed out that the nature of the stripes on the belly is variable, some birds being broadly, others narrowly striped.

This wryneck occurs in southern Kenya Colony from Simba to the Elgeyu Escarpment and Mt. Elgon. Its altitudinal range appears to be from 3,400–9,000 feet.

## Order PASSERIFORMES

### Family EURYLAIMIDAE. Broadbills

### Smithornis capensis suahelicus Grote

*Smithornis capensis suahelicus* Grote, Orn. Monatsb., **34**, 1926, p. 17: Magogoni, Tanganyika Territory.

1 ♂, 1 ♀, Uluguru Mountains, Tanganyika Territory, 13 May 1921.

"Also Bagilo and Kilosa. The note of this bird is very like a frog's call. On hearing it for the first time at Kipera I actually searched for a tree frog before locating the bird." (A.L.)

The two birds listed above are in fresh plumage; in fact they were just completing their molt when shot, the outermost primaries being only partly grown in both. Their dimensions are as follows—male: wing 70.5, tail 51.5, culmen 17; female: wing 70, tail 49, culmen 17 mm.

The races of *Smithornis capensis* are based on rather fine differences, but the species appears to vary so much more geographically than individually, that all the described forms are valid. The present one is nearest to the Angolan race *albigularis* but is a little more olive-brownish above, and not so white, more washed with pale buffy, below, and with heavier ventral streaks. It is somewhat smaller than the

[1] Nov. Zool., **29**, 1922, p. 62.

Kenyan form *medianus;* less grayish above than the southern, typical, *capensis;* lighter than *meinertzhageni* of Mt. Elgon and the Kavirondo countries. The nominate form occurs from South Africa north through Nyasaland and Mozambique to southern Tanganyika Territory (Lindi, and the Rovuma River), while *suahelicus* is known from the Kilimanjaro district (Kibonoto and Kahe), Magogoni, Usaramo, and the Uluguru Mountains. It is not known from the Usambara range although it probably occurs there. The six specimens from the Uluguru Mountains which I referred to *medianus*[1] really belong to the present recently described form, the name of which was overlooked when writing that paper.

Following Bannerman's account of the subspecies of *Smithornis capensis*[2] there are now seven named forms, but considering the fact that these birds are rather shy inhabitants of the mountain forests and therefore very local with wide gaps in their distribution, it seems not unlikely that additional subspecies still remain to be discovered.

## Family ALAUDIDAE. Larks

### Mirafra africana tropicalis Hartert

*Mirafra africana tropicalis* Hartert, Nov. Zool., **7**, 1900, p. 45: Bukoba, west shore Lake Victoria.

1 ♂, Kabale, Ruanda, Uganda, 24 September 1919.
1 ♀, Rukaya, Mawokota, Uganda, 3 November 1919.
2 ♂, 1 ♀, Chantwara, Bukoba, Tanganyika Territory, 27 December 1922 to 3 January 1923.

The subspecies of *Mirafra africana* are based on average characters and are therefore sometimes difficult to identify without large series. Inasmuch as the material available for study is rather inadequate (some 20 birds in all, representing five forms) I can do no better than to follow Sclater.[3] The present birds agree with the characters of *tropicalis* in having the feathers of the back largely blackish, and the lesser, upper primary coverts bright rufous cinnamon with almost no dark brown markings.

This form inhabits Uganda, western Kenya Colony (Kavirondo and Sotik districts), the Ikoma and Mwanza areas of Tanganyika

[1] Ibis, 1928, p. 83: Bagilo, Nyange, and Vituri.
[2] Ibis, 1923, pp. 718–719.
[3] Syst. Avium Aethiop, part ii, 1930, pp. 310–312.

Territory, west to the eastern Belgian Congo (Kivu), Ruanda, and Urundi. On the slopes of Ruwenzori it is replaced by a darker form, *ruwenzoria* Kinnear. I have seen a specimen of the latter, and find it to be very slightly darker above than *tropicalis*, but the difference is so slight that I am not too convinced of the validity of the Ruwenzori race.

Van Someren[1] records the breeding season in western Uganda as being in June.

### Mirafra africana dohertyi Hartert

*Mirafra africana dohertyi* Hartert, Bull. Brit. Orn. Cl., **19**, 1907, p. 93: Escarpment, 6,500 feet, Kenya Colony.

1 ♂, Samumba, Singida, Tanganyika Territory, 25 February 1922.

This specimen appears to be the first record for Tanganyika Territory, and the southernmost one for the race. It was compared with a good series at Tring by either Dr. Hartert or Mr. Goodson and identified as *dohertyi*. I find it agrees with another of this race from Lake Naivasha, Kenya Colony, although with my limited material, I am not unwilling to "lump" *dohertyi* with *athi*. It is, however, more rufous on the crown than the Naivasha bird, and may be intermediate between *dohertyi* and *tropicalis*.

The range of *dohertyi* is as follows: the highlands of the interior of Kenya Colony on both sides of the Rift Valley, east to Nairobi, and south to Singida, Tanganyika Territory.

### Mirafra africana athi Hartert

*Mirafra africana athi* Hartert, Nov. Zool., **7**, 1900, p. 46: Athi Plains, Kenya Colony.

1 ♂, 1 ♀, Ngong, near Nairobi, Kenya Colony, 7 July 1919.
1 ♂, Nairobi district, Kenya Colony, 18 August 1920.

Van Someren[2] and Sclater[3] recognize *harterti* as distinct from *athi*, although the latter admits its distinctness as doubtful. I cannot add anything positive to the problem as I have seen no actual *harterti*, but the specimens of *athi* examined lead me to wonder if it is not a form

[1] Ibis, 1916, p. 434.
[2] Nov. Zool. **29**, 1922, p. 175.
[3] Syst. Avium Aethiop., part ii, 1930, p. 312.

with a tendency toward dichromatism, of which the rufous phase may be *harterti*. Tentatively, I assume this to be the case, in which event the range of *athi* includes the drier parts of Kenya Colony from Nairobi and the Athi Plains to Magadi, Ukamba, and the Teita country.

The male taken near Nairobi on 18 August is somewhat intermediate between *athi* and *dohertyi*. It is in fine fresh plumage, while the two July birds are much abraded.

### Mirafra fischeri kawirondensis van Someren

*Mirafra fischeri kawirondensis* van Someren, Bull. Brit. Orn. Cl., **41**, 1921: p. 125, Kisumu, Lake Victoria.

1 ♀, Lalago, Mwanza, Tanganyika Territory, 18 October 1922.
1 ♂, Sagayo, Mwanza, Tanganyika Territory, 24 October 1922.
1 ♂, Kome Island, Mwanza, Tanganyika Territory, 23 November 1922.

I have no topotypical *kawirondensis* available for comparison, and have placed these birds in that race somewhat hesitantly. The female from Lalago is considerably paler above and below than either of the males, and approaches *zombae*, from which it differs only in lacking the slight grayish bloom found on the upperparts of the latter (which difference may be due to wear). Oustalet's form *tigrina* is known to me only from descriptions, but it may be noted that when the two males listed above were examined at Tring, either Dr. Hartert or Mr. Goodson penciled on the back of the labels," ? tigrina Oust., ? kavirondensis v. Som." It seems not unlikely that the Mwanza area is the meeting place of *zombae*, *fischeri*, and *kawirondensis* and that in that region a great variety of intergrades occur. The name to be used for them is open to question and would probably be different in different cases, as some specimens are nearer to one form than to another. It might perhaps, be nearer the truth to record the two males as *kawirondensis*>*fischeri* and the female as *fischeri* (or *zombae*)<*kawirondensis*.

A male from Ruwenzori (Dent. coll.) is darker, more blackish, less brownish, than either of the present two. It represents the black phase, while Loveridge's birds are of the more rufous type. The Sagayo male has a wing length of only 77 mm., which is slightly shorter than any of those listed by van Someren,[1] the other male is slightly larger, having a wing 79.5 mm. in length; the female has a wing measurement of 78.5 mm.

[1] Nov. Zool., **29**, 1922, p. 177.

### Mirafra fischeri zombae Ogilvie-Grant

*Mirafra zombae* Ogilvie-Grant, Bull. Brit. Orn. Cl., **13**, 1902, p. 27: Zomba plain, Nyasaland.

1 ♂, Lumbo, Mozambique, 25 July 1918.

This male is of the rufous brown phase, and has the grayish bloom mentioned as characteristic of this race by van Someren.[1] It has a wing length of 77 mm., a trifle smaller than the minimal male measurement given by van Someren (78 mm.). The bird is in fresh plumage and had apparently only recently completed its molt when shot.

This race occurs from Swaziland and Southern Rhodesia (Mashonaland) through Mozambique to Nyasaland and to the interior of south-central Tanganyika Territory, merging with *fischeri* and *kawirondensis* in the Unyamwesi and Unyanyembe region.

### Mirafra africanoides intercedens Reichenow

*Mirafra intercedens* Reichenow, Orn. Monatsb., **3**, 1895, p. 96: Loeru, Kondoa Irangi district, Tanganyika Territory.

1 ♀, Dodoma, Tanganyika Territory, 7 December 1918.

Dodoma appears to be the southernmost locality for this lark, if the range as given by Sclater[2] is complete. The bird ranges north from there through the scrub country of Kenya Colony (from 2,500–5,000 feet above the sea) north to Shoa and the Hawash district of Ethiopia, and to British Somaliland. If, as I think not unlikely, *intercedens* and *alopex* be eventually found to be the same, the latter name will have to be used as it has five years priority.

The present specimen is in fresh plumage. It has the nape grayer, less buffy than the figure given by Shelley.[3]

### Eremopteryx leucopareia (Fischer and Reichenow)

*Coraphites leucopareia* Fischer and Reichenow, Journ. f. Ornith., 1884, p. 55: Klein-Aruscha (=Arusha), Tanganyika Territory.

1 ♂, 1 ♀, Tabora, Tanganyika Territory, 20 November 1921.

While with the Smithsonian-Chrysler Expedition, Loveridge collected a female at Dodoma, Tanganyika Territory, on 19 May 1926.

[1] Nov. Zool., **29**, 1922, p. 176.
[2] Syst. Avium Aethiop., part ii, 1930, p. 315.
[3] Birds of Africa, **3**, 1902, plate xviii, fig. 1.

This bird is in worn plumage; the two taken in November are in fresh feathering.

In the region south of Mt. Kilimanjaro this lark is known to nest in March, and inasmuch as the single annual molt follows the breeding season, the fact that the Dodoma bird taken in May is still in worn plumage, suggests that the nesting season may be a prolonged one.

This bird ranges from Tabora and Dodoma north to Nairobi, Kisumu, and the Elgon region of Kenya Colony to northeastern Uganda.

### Tephrocorys cinerea cinerea (Gmelin)

*Alauda cinerea* Gmelin, Syst. Nat., **1**, pt. 2, 1789, p. 798: Cape of Good Hope, ex Latham.

1 ♂, Nairobi, Kenya Colony, 26 August 1915.
1 ♂, Buchosa, Bukoba, Tanganyika Territory, 30 January 1923.

I cannot see any constant differences between *saturatior* and *cinerea*, and therefore synonymize the former with the latter. Likewise, I consider *anderssoni* the same as *cinerea*.

Both the present specimens appear to be fully adult as far as the plumage characters are concerned, but have light colored bills which betray their relative immaturity.

## Family HIRUNDINIDAE. Swallows

### Hirundo rustica rustica Linnaeus

*Hirundo rustica* Linnaeus, Syst. Nat. 10th ed., **1**, 1758, p. 191: Europe; restricted type locality, Sweden.

1 ♂, 1 ♀ ?, Kilosa, Tanganyika Territory, 11 January 1921.

"Also Dar es Salaam, 18 December 1918." (A.L.)

The female (?) is molting, especially in the tail, and is very much whiter below than the male. In fact, these two specimens represent just about the extremes of color variation found in the European barn swallow.

This species is a regular migrant and winter visitor in Kenya Colony, Uganda, and Tanganyika Territory, first appearing in August, and last seen in May.

### Hirundo angolensis arcticincta Sharpe

*Hirundo arcticincta* Sharpe, Ibis, 1891, p. 119: Mt. Elgon, 7,000 ft.

1 ♂, Kome Island, Mwanza, Tanganyika Territory, 22 November 1922.

The race *arcticincta* is not too well differentiated from typical *angolensis*, the characters of broader, whiter margins to the under tail coverts, and more white on the middle of the belly being only average ones.

This bird had previously been recorded only from west of Lake Victoria. The present record is the first one from the south end of that Lake.

C. H. B. Grant[1] notes that typical *angolensis* is a breeding bird at Kasulu, Kigoma Province, but that it spends the non-breeding season in the Belgian Congo or Angola. At Kasulu it arrives in November, and after breeding, sometimes rearing two broods, it departs in May.

### Hirundo smithii smithii Leach

*Hirundo smithii* Leach, App. to Tuckey, Voy. R. Zaire, App. iv, 1818, p. 407: Chisalla Island, lower Congo.

1 ♂, 1 ♀, Morogoro, Tanganyika Territory, 25 May 1917.

"Also seen at Mombasa, Dar es Salaam, and Kilosa." (A.L.)

The male is a young bird with dusky brownish gray crown, occiput, and nape. The female is fully adult, and is molting the wings.

In Kenya Colony and northern Tanganyika Territory the wire-tailed swallow is very numerous and widely distributed, but in Uganda, Urundi, and Ruanda, it is scarcer and much more local. The breeding season is not limited to any definite months, but nests have been found with eggs or young in April, May, June, October, and December.

At Kilosa a nest with young was found on 1 December 1920; another with eggs on 27 April 1922; still another with eggs on 31 April 1923, and three nests with three young each on 6 May 1923[2] and one at Morogoro on 23 July, and another at Frere Town on 1 July.[3]

[1] Bull, Brit. Orn. Cl., **47**, 1927, p. 126.
[2] cf. Proc. Zool. Soc. Lond., 1923, p. 907.
[3] Proc. Zool. Soc. Lond., 1922, p. 847.

Thousands of these swallows were noted gathering on the telegraph wires, apparently for migration, on 14 February, at Morogoro.

### Hirundo rufula emini Reichenow

*Hirundo emini* Reichenow, Journ. f. Ornith., 1892, p. 215: Busisi, west shore of Lake Victoria, Tanganyika Territory.

1 ♂, Morogoro, Tanganyika Territory, 31 July 1917.
1 immature ♂, Nairobi, Kenya Colony, 22 June 1919.
1 ♀, Bagilo, Uluguru Mountains, Tanganyika Territory, 8 May 1922.

"Also Mombasa." (A.L.)

The immature bird is much whiter on the underparts than the adults and lacks, to a large extent, the bright bluish gloss on the upper parts found in older birds. It is just commencing to molt, however, and a few tawny cinnamomeous feathers are present among the whitish ones on the breast and abdomen, and some bluish scapulars shine among the dull blackish interscapulars and upper wing coverts on the old plumage.

In Tanganyika Territory this swallow is rather local but in Kenya Colony it is widely distributed and common. In Uganda it is again more local, although not to as great a degree as in Tanganyika.

### Hirundo senegalensis senegalensis Linnaeus

*Hirundo senegalensis* Linnaeus, Syst. Nat. 12th ed., **1**, 1766, p. 345: Senegal.

1 ♂, Rukaya, Mawokota, Uganda, 3 November 1919.

In southern Kenya Colony and the Serengeti Plains east of Mt. Kilimanjaro this race is replaced by a paler form, *hybrida*, which frequently has white spots on the rectrices like the darker, southern *monteiri*.

This specimen is in fine, fresh plumage, and is rather darker than the average example from Uganda, but is not as dark as the very intensely colored *saturatior* of the Gold Coast, according to Bannerman's description of that form.[1]

[1] Bull, Brit. Orn. Cl., **43**, 1923, p. 85.

### Hirundo abyssinica abyssinica Guérin

*Hirundo abyssinica* Guérin, Rev. Zool., 1843, p. 322: Abyssinia (= Ethiopia):

1 ♂, 1 ♀, Morogoro, Tanganyika Territory, 25–30 June, 1917.
1 immature ♂, 1 immature ♀, Kilosa, Tanganyika Territory, 21 January 1921.
Nestling, Kilosa, Tanganyika Territory, 16 January 1922.
1 adult ♀, Kilosa, Tanganyika Territory, 20 September 1922.

"Also Mombasa, Dar es Salaam, and Kongwa." (A.L.)

These birds are clearly *abyssinica*, not *unitatis*. They resemble Guérin's type in the width of the ventral stripes, and are thus in agreement with van Someren's birds from Kenya Colony which, he writes[1] agree with others from Ethiopia.

The nestling is devoid of down and the pterylae are all well marked and the feathers just beginning to sprout. The wings and tail are farthest along in development; the rump and upper tail coverts, which are reddish brown, are next, then the black feathers of the spinal tract and the rufous ones on the crown. The ventral tracts are the least developed, none of the feathers being out of their sheaths at all. The spinal pteryla is, as in many swallows, bifurcated, the point of bifurcation being on the lower back and, the two divergent portions of this feather tract meet again on the mid-line of the rump. It is rather curious that the feathers of this tract anterior to the point of bifurcation are black; those posterior to it, reddish brown.

The two young birds are in juvenal plumage and appear to be about three weeks old (that is, approximately a week out of the nest). They resemble the adults but lack the long outermost rectrices; have the upper back much less glossy bluish, more dull blackish, and have the forehead, crown, occiput, and nape spotted with blackish. As a matter of fact, this last character is due to the feathers being blackish, narrowly bordered and tipped with rufous brown.

The adult female from Morogoro is in molt, especially in the tail.

The breeding season in north-central Tanganyika Territory is rather prolonged. Loveridge[2] records nests in process of being built in November, and fledged young as late as the middle of March. At Morogoro Loveridge[3] found nests as early as 25 June and as late as 15 August, while at Kongwa he found a nest with three eggs on 25

[1] Nov. Zool., **29**, 1922, p. 91.
[2] Proc. Zool. Soc. Lond., 1923, p. 907.
[3] Ibid, 1922, p. 847.

April. In Kenya Colony and Uganda van Someren[1] found nests with eggs from May to July and from October to December. It appears, therefore, taking all these data together, that the stripebreasted swallow breeds throughout the year in tropical East Africa.

### Riparia cincta suahelica van Someren

*Riparia cincta suahelica* van Someren, Nov. Zool., **29**, 1922, p. 90: Escarpment, Kenya Colony.

1 ♂, 1 ♀, Kabale, Ruanda, Uganda, 20 September 1919.

"Also Chantwara, Bukoba." (A.L.)

This race of the black-collared sand martin occurs throughout Kenya Colony and Uganda and into Northern Tanganyika Territory. The male has a wing 128 mm. in length; the female, 121 mm. The difference between this race and typical *cincta* is that the latter is lighter above and has a somewhat lighter pectoral band.

The two specimens are in rather worn plumage and are probably birds that finished breeding not very long before they were collected. The nesting season, as far as known, is from May to July, but is probably of greater duration.

### Ptyonoprogne rufigula rufigula (Fischer and Reichenow)

*Cotyle rufigula* Fischer and Reichenow, Journ. f. Ornith., 1884, p. 53: Lake Naivasha, Kenya Colony.

1 ♂, 1 ♀, Dodoma, Tanganyika Territory, 21 October 1921.
1 ♀, Kilosa, Tanganyika Territory, 2 May 1923.

"Also Kongwa and Pooma." (A.L.)

The female from Kilosa was a breeding bird and was collected with her set of eggs.

The rock martin is found throughout the region represented by the present collection.

At Kilosa, Loveridge found nests with eggs on 17 February, 17 March, 5 April, and 1 May. At Kabete he found a nest with three eggs on 6 May.

[1] Ibis, 1916, p. 374.

### Psalidoprocne holomelaena massaica Neumann

*Psalidoprocne holomelaena massaica* Neumann, Orn. Monatsb., 1904, p. 144: Kikuyu, Kenya Colony.

1 adult ♂, Kilosa, Tanganyika Territory, 5 January 1921.
1 immature ♂, Ilonga, Kilosa, Tanganyika Territory, 24 March 1923.

> "Found entering and leaving holes in the bank of a dry ravine; in another instance a colony was found occupying holes in the sides of a pit less than twenty feet in diameter." (A.L.)

The immature bird is molting into adult plumage. The juvenal feathers are dull earth-brown, the new ones black with a greenish gloss.

This saw-winged swallow is chiefly a bird of the mountain forests of eastern Africa from Elgon, Mau, and Kenya, south to Kilimanjaro, the Uluguru and the Usambara Mountains. However, it is not wholly restricted to mountains, as is shown by the present specimens, and by records from the lowland forest of Taveta.

### Psalidoprocne petiti orientalis Reichenow

*Psalidoprocne orientalis* Reichenow, Journ. f. Ornith., 1889, p. 277: Lewa, Usambara Mountains, Tanganyika Territory.

1 ♂, Kilosa, Tanganyika Territory, 16 July 1921.

The record of this swallow from Bagilo, Uluguru Mountains[1] is erroneous, as the specimen in question is an immature *Psalidoprocne holomelaena massaica.*

This appears to be a rather scarce, local species, less widely distributed and less numerous where found than *P. h. massaica.* It is also more southern than the latter, as it ranges south to Nyasaland. The two may be told apart very easily by the color of the under wing coverts, which are white in *orientalis* and grayish in *massaica.*

The present specimen is molting into adult plumage, the brownish feathers of immaturity being large present on the underparts, more completely replaced by dark new ones on the upperparts.

[1] Friedmann, Ibis, 1928, p. 84.

### Psalidoprocne albiceps Sclater

*Psalidoprocne albiceps* Sclater, Proc. Zool. Soc. Lond., 1864, p. 14: Usui, southwest of Lake Victoria.

1 ♂, Kabare, Bukoba, Tanganyika Territory, 13 January 1923.

The single specimen listed above is in very worn plumage. Van Someren[1] found that the breeding season in Uganda and North Kavirondo, Kenya Colony, is in June and October. It appears from the plumage of the Bukoba bird that it must have bred later than in October, as birds nesting then would be in fresh feathering before January.

The white-headed swallow occurs throughout the interior of East Africa from the Southern Sudan to Nyasaland.

## Family CAMPEPHAGIDAE. Cuckoo-shrikes

### Campephaga flava flava Vieillot

*Campephaga flava* Vieillot, Nouv. Dict. d'Hist. Nat., **10**, 1817, p. 49 (female): Southern Africa.

1 adult ♂, 2 unsexed (immature ♀ ?), Ngong Forest, Kenya Colony, 16–23 July 1919.
1 immature ♂, Nairobi district, Kenya Colony, 24 August 1920.
1 adult ♂, 1 juvenal ♂, 1 juvenal ♀, Bungu, Usambara Mountains, Tanganyika Territory, September 1921.
1 adult ♂, Mbonoa, Singida, Tanganyika Territory, 29 September, 1922.

"Also Dar es Salaam, Bagilo, and Kilosa, Tanganyika Territory, and Kabale, Uganda." (A.L.)

The adult males from Mbonoa and the Ngong Forest are of the variety *hartlaubi* with yellow shoulder patches. According to Loveridge's notes, the bird from Kabale, Uganda, which I have not seen, is also of this type.

The two juvenal birds from Bungu are very much less barred on the underparts than the year old (?) birds from Ngong. Neumann[2] has suggested that this species goes through a cycle of three plumages (of which the last two are similar in the female)—the juvenal stage

[1] Ibis, 1916, p. 375.
[2] Journ. f. Ornith., 1916, p. 149.

in which the sexes are alike, similar to the adult female plumage but less barred beneath and with the upper back barred; the immature plumage which resembles the adult female stage; and the adult plumage, in which the male assumes the black feathering so different from that of the female.

The immature male from Nairobi is molting into adult plumage and presents a bizarre, pied appearance. The tail molt is peculiar in that the middle pair and the two outermost pairs of rectrices are new; the other three pairs are old. In the wing molt the primaries are replaced before the secondaries.

This caterpillar-shrike inhabits Africa from the Cape northwards to Benguella, the Katanga, the Kivu region, and through East Africa to Tertale near Lake Stephanie, southern Ethiopia.

This is the bird commonly called *C. nigra* in literature, but as Oberholser has shown[1] *flava* is based on a female of the same species, on the male of which the name *nigra* was founded, and as *flava* has priority by one page, it is the name to be used.

This species is a forest bird and is consequently rather local in the territory covered by the present collection. Sclater[2] summarizes what was known at the time of his writing of its distribution. It appears to be common in Nyasaland, " . . . and in like manner . . . generally distributed over the whole of Portuguese and German East Africa. Böhm records its occurrence throughout the country he explored between Zanzibar and Lake Tanganyika, but found it most plentiful to the west of that lake in the mountains of the Marungu country. Fischer likewise found the birds common in German East Africa northward to Mombasa . . . "

### Campephaga quiscalina münzneri Reichenow

*Campephaga quiscalina münzneri* Reichenow, Orn. Monatsb. **23**, 1915, p. 91: Sanji, Mahenge, southwestern Tanganyika Territory.

1 Immature ♂, 1 immature ♀, Morogoro, Tanganyika Territory, 1 August 1917.

1 Adult ♂, 1 adult ♀, Bagilo, Uluguru Mountains, Tanganyika Territory, 13–17 May 1922.

These specimens constitute the northernmost records for the subspecies, which (as far as published accounts indicate) was previously

[1] Proc. U. S. Nat. Mus., **28**, 1905, p. 921.
[2] Shelley's Bds. Afr. **5**. pt. ii, 1912, p. 208.

known only from the type, an adult male from Sanji, and a few from the Uluguru range. The plumages of the immature birds and of the adult female, being hitherto unknown, may be briefly described at this point. The adult female matches the description of the corresponding plumage of *martini* (of which I have seen no adult female) but has no faint bars on the white chin and throat except at the lower end of the latter. In the juvenal plumage the sexes are alike and resemble the corresponding stage of *martini*, but differ from the latter (as described by van Someren)[1] in that the supereiliary stripe is not white but yellowish, the stripe from the bill through the eye to the auriculars is not black, but dark olive gray, the outer webs of the outermost pair of rectrices are pure yellow with no black longitudinal line, and the middle of the abdomen is whitish, not yellowish, the under tail coverts also being whitish, barred, like the abdomen, with fuscous.

Nothing is known of the habits of this bird, which is not surprising as it was known from a single skin until Loveridge obtained these four.

### Campephaga quiscalina martini Jackson

*Campophaga martini* Jackson, Bull. Brit. Orn. Cl., **31**, 1912, p. 18: Nandi, 6,500 feet, Kenya Colony.

1 Adult ♂, Nairobi, Kenya Colony, 18 October 1915.
1 Adult ♂, Ngong Forest, Kenya Colony, 12 July 1919.

*Campephaga theliei* Schouteden[2] is a synonym.

This species has three geographic forms, as follows:

1. *C. quiscalina quiscalina:* West Africa from Sierra Leone and Liberia to Northern Angola, in forested areas only.

In this race the adult males have a purple sheen on the throat, but not on the breast and abdomen, the adult females have the crown grayish, but the gray color not extending over the nape, and the underparts have no barrings at all.

2. *C. quiscalina martini:* the forests of the Eastern Congo and of Uganda from Lake Albert east to the Kikuyu district of Kenya Colony. This form differs from the nominate one in that in the adult males the purple sheen extends to the breast and abdomen; and in the females the nape is gray like the crown, and the throat, breast and flanks are finely and faintly barred with dusky grayish.

3. *C. quiscalina münzneri:* the forested highlands of Tanganyika

[1] Ibis, 1916, p. 386.
[2] Rev. Zool. Afr., **3**, 1914, p. 266: Kilo, Belgian Congo.

Territory from Mahenge to the Uluguru Mountains. Of this subspecies *C. confusa* Madarasz[1] is a synonym. This form differs from *martini* only in the male which wholly lacks the purple sheen, having in its stead a rich, deep bluish gloss. Van Someren[2] writes that this race has a green gloss on the underparts, but the sheen is really deep blue. It may look slightly greenish when placed next to a specimen of *martini*, but not when viewed by itself.

The July specimen is molting the rectrices but is otherwise in fresh plumage. The October bird is somewhat worn. The dimensions of the latter specimen are: wing 95.5, tail 94, culmen 17.5 mm., of the former —wing 95, tail (molting) 89, culmen 17.5 mm.

### Graucalus pectoralis Jardine and Selby

*Graucalus pectoralis* Jardine and Selby, Ill. Orn. **2**, pl. lvii, 1828: Sierra Leone.

1 ♂, Kipera, Kilosa, Tanganyika Territory, 8 September 1922.

"Shot from the top of a tall tree in open miombo bush; it does not appear to be at all a common species in Tanganyika Territory." (A.L.)

This specimen is pale above, recalling Sharpe's supposed form *anderssoni*. It is also rather small, having a wing length of only 137 mm. The bird is in very fresh plumage, but it does not appear that feather "bloom" is responsible for its general lightness of color.

The chin and throat are dark gray in this bird. This is the usual condition in the male, in spite of the statements given in Shelley's "Birds of Africa"[3] where the sexes are said to be alike and both variable, the chin and throat, " . . . still more variable, being black in an Abyssinian specimen, and pure white with a grey collar in two . . . from Mamboio and Mpimbi, in others they are uniform dusky grey, or paler grey fading into white towards the chin."

### Graucalus caesia pura Sharpe

*Graucalus purus* Sharpe, Ibis, 1891, p. 121: Mt. Elgon.

1 ♂, 1 ♀, Nairobi Forest, Kenya Colony, 18 October 1915.

"Also Bungu and Bagilo." (A.L.)

[1] Ann. Mus. Hung., **13**, 1915, p. 394: Ngare Dowash, Tanganyika Territory.
[2] Nov. Zool., **29**, 1922, p. 107.
[3] vol. **5**, 1912, p. 218.

This bird is common in the forests throughout the region under discussion in this paper, but not in the low, coastal wooded areas. Little appears to be known of its habits, but Sclater[1] writes that the breeding season in East Africa is probably in February and March.

## Family DICRURIDAE. Drongos

### Dicrurus adsimilis divaricatus (Lichtenstein)

*Muscicapa divaricata* Lichtenstein, Verz. Doubl. Zool. Mus. Berlin, 1823, p. 52: Senegal.

1 ♂, Morogoro, Tanganyika Territory, 3 July 1917.
1 ♀, Lumbo, Mozambique, 17 July 1918.

"Also Frere Town, Dar es Salaam, Kilosa and Myombo. A common species at Kilosa and in suitable localities throughout the country." (A.L.)
Found throughout the region under consideration.

Both the above specimens are immature. The female has the feathers of the abdomen and flanks broadly tipped with white and also has some white on the feathers of the throat and breast. The male has the throat and breast dark blue-black as in adult birds, but has the abdomen with a large amount of white, although less than in the female specimen.

Both these birds are rather small, the wing of the Lumbo female being 116, that of the Morogoro male, 110 mm., and both might be thought of as supporting the validity of Peters' form *fugax*, described from Inhambane. However, the individual variation in an extensive series from all parts of Eastern Africa is so great that I cannot see any reason for maintaining *fugax* (or *lugubris*). Sclater[2] has come to the same conclusion.

At Tambali, on 21 October, Loveridge flushed a bird from its nest, " . . . built in the fork of a branch of a low tree at a height of seven feet from the ground. The nest was made of fibres and grasses fastened together with spider-web, but unlined. It held three perfectly fresh eggs, one of which was misshaped with a protuberance at the lower pole. The ground-colour of these eggs was slightly pinkish, upon

[1] Shelley's Bds. Afr. **5**, 1912, pp. 223–224.
[2] Syst. Avium Ethiop., part ii, 1930, p. 594.

which were superimposed brownish-red blotches, particularly thick around the larger pole. I watched a male displaying a few days ago, rising and diving before the female which was sitting on a tree."[1]

### Dicrurus ludwigii ludwigii (Smith)

*Edolius ludwigii* A. Smith, S. Afr. Quart. Journ. 2nd ser., 1834, p. 144: Port Natal (= Durban).

2 ♂, Bungu, Usambara Mountains, Tanganyika Territory, September 1921.

2 ♂, Uluguru Mountains, Tanganyika Territory, 18–29 May 1921.

Ludwig's drongo is widely distributed over Southern and Eastern Africa but appears to be less numerous everywhere than the larger species *D. adsimilis divaricatus*. On Mt. Elgon and the adjacent northern part of the Kavirondo country *ludwigii* is replaced by another race, *elgonensis*. I have seen no material of the latter and cannot form any opinion of it. However, it may be noted that in the original description[2] van Someren merely compares *elgonensis* with *sharpei* of West Africa, and the characters by which the former differs from the latter are the same as those by which *ludwigii* differs from *sharpei*. I have seen no direct comparison between *elgonensis* and *ludwigii*, but van Someren[3] states that the former resembles *sharpei* in color (while in the original description he writes that *ludwigii* is more greenish than the latter). Sclater[4] considers *elgonensis* a valid form of *ludwigii*.

This drongo appears to be more retiring and shy, more a denizen of the thickets than *adsimilis*, but it has the same pugnacious attitude towards crows. Loveridge[5] records seeing a pair of these drongos pursuing a white-necked raven (*Corvultur albicollis*), " . . . and one of them actually rode on the rump of the larger bird as it pecked it mercilessly . . . "

[1] Proc. Zool. Soc. Lond., 1923, p. 904.
[2] Bull. Brit. Orn. Cl., **40**, 1920, p. 95.
[3] Nov. Zool., **29**, 1922, p. 125.
[4] Syst. Avium Ethiop., part ii, 1930, p. 595.
[5] Proc. Zool. Soc. Lond., 1926, p. 76.

## Family ORIOLIDAE. Orioles

### Oriolus oriolus oriolus (Linnaeus)

*Coracias oriolus* Linnaeus, Syst. Nat., 10th ed., 1758, p. 107: Europe and Asia; restricted type locality, Sweden (Hartert).

1 ♂, Morogoro, Tanganyika Territory, 2 November 1917.
1 ♂, Ilonga, Kilosa, Tanganyika Territory, 28 March 1920.
1 ♀, Kilosa, Tanganyika Territory, 28 January 1921.

"Also Tumutumu, Mahaka, and Ushora." (A.L.)

The European golden oriole is a regular winter visitor in tropical and southern Africa, especially numerous in the equatorial eastern parts of the continent. Meinertzhagen[1] has outlined its winter distribution in detail and it need not be repeated here. In Kenya Colony and northern Tanganyika Territory the species arrives in mid-September and leaves in April, but a few linger later. Unlike most members of their genus, they prefer open country to forest.

The bird taken on 28 March is in fresh plumage, while the November and January specimens are still in old, abraded, feathering.

### Oriolus auratus notatus Peters

*Oriolus notatus* Peters, Journ. f. Ornith., 1868, p. 132: Tete, Zambesi valley.

1 ♂, Morogoro, Tanganyika Territory, 17 October 1917.
1 ♂, Kilosa, Tanganyika Territory, 30 November 1920.
1 ♀, Mpinga, Dodoma, Tanganyika Territory, 15 April 1922.
1 immature ♀, Msimba, Ilonga, Tanganyika Territory, 27 March 1923.

"Also Tumutumu and Mombasa; Bungu, Dar es Salaam, Tindiga, and Mahaka." (A.L.)

This oriole occurs throughout the region covered by the present collection, but appears to be rather local in its distribution, and is nowhere very common.

The March and April birds are in rather worn plumage; the October and November specimens are in fresh feathering.

[1] Ibis, 1923, pp. 57–60.

### Oriolus monacha kikuyuensis van Someren

*Oriolus larvatus kikuyuensis* van Someren, Nov. Zool., **29**, 1922, p. 127: Nairobi, Kenya Colony.

1 ♂, Morogoro, Tanganyika Territory, 10 July 1917.
1 ♀, Morogoro, Tanganyika Territory, 15 August 1917.
1 ♂, 1 adult ♀, 1 juvenal ♀, Ngong Forest, near Nairobi, Kenya Colony, 16 July 1919.

"Also Kilosa and Kakindu." (A.L.)

The Morogoro birds are intermediate between *kikuyuensis* and *reichenowi*, but appear to be nearer the former race. Their wing dimensions are rather small however, being 126 mm., in the male and 134 mm., in the female. Both are in fresh plumage. The adults from Ngong have wing lengths of 129 and 135 mm.

The juvenal specimen is fully grown and somewhat abraded, indicating an approach to the time of the postjuvenal molt.

### Oriolus monacha reichenowi Zedlitz

*Oriolus larvatus reichenowi* Zedlitz, Journ. f. Ornith., 1916, p. 1: Afgoi, southern Somaliland.

1 juvenal ♂, Dar es Salaam, Tanganyika Territory, 9 January 1919.

This specimen, apparently just fully grown, and in very fresh plumage (a few of the crown feathers still basally encased in their sheaths) has a wing length of 124 mm. Dar es Salaam appears to constitute the southern limit of the range of *reichenowi*, although this may be due, in part at least, to the lack of coastal birds from south of there. It would be interesting to know the racial identity of the birds Grote[1] recorded from Mikindani as "*rolleti*."

### Oriolus percivali Ogilvie-Grant

*Oriolus percivali* Ogilvie-Grant, Bull. Brit. Orn. Cl., **14**, 1903, p. 18: Kikuyu Kenya Colony.

Loveridge collected three specimens in the Ngong Forest, Kenya Colony, in 1915, for the Nairobi Museum, where they now are. His native collector obtained one at Tumutumu in 1920, which was subsequently lost in transit.

[1] Journ. f. Ornith., 1913, p. 131.

### Oriolus chlorocephalus Shelley

*Oriolus chlorocephalus* Shelley, Ibis, 1896, p. 183, pl. iv: Mt. Chiradzulu, Nyasaland.

1 ♂, 1 ♀, Bungu, Usambara Mountains, Tanganyika Territory, September 1921.

"A series of half a dozen were brought back from Bungu where it is presumably common though I have only met with it at Amani." (A.L. in 1927)

The green-headed oriole, perhaps the most distinctive species of the genus in Africa, has a very discontinuous range. It is known from the Chiradzulu highlands of Nyasaland and the Uluguru and the Usambara Mountains in Tanganyika Territory. Judging by the relatively few specimens known, the species appears to be less common in the Uluguru than in the Usambara range. It is strange that Roehl did not find it in the three years he spent in the Usambara Mountains.

The present pair, and another pair from Amani also in the Usambara range (erroneously reported as from Phillipshof by Friedmann[1]) constitute the northernmost records for this fine bird.

Nothing is known of the habits of this oriole, except that it occurs in forested country only.

The present specimens are in fresh plumage; their dimensions are as follows: male—wing 130.0, tail 96.0, culmen 27.5, tarsus 26.0 mm.; female—wing 126.0, tail 95.0, culmen 27.0, tarsus 24.5 mm.

## Family CORVIDAE. Crows

### Corvus splendens splendens Vieillot

*Corvus splendens* Vieillot, Nouv. Dict. d'Hist. Nat., **8**, 1817, p. 44: Bengal.

1 unsexed, Zanzibar, 1920.

"Collected and presented to me by Dr. W. Aders. This crow is not found on the mainland though very abundant on Zanzibar where it has presumably been introduced through human agency." (A.L.)

This specimen appears to belong to the typical race of the Indian house-crow.

[1] Ibis, 1928, p. 88.

### Corvus albus P. L. S. Müller

*Corvus albus* P. L. S. Müller, Natursystem, Anhang., 1776, p. 85: Senegal.

1 ♂, Fort Hall, Kenya Colony, 16 November 1915.
1 ♀, Dodoma, Tanganyika Territory, 21 November 1921.

"Also Ilonga and Kilosa." (A.L.)

This crow is widely distributed through the region covered by this report. It is a common bird everywhere except in forested areas and is frequently found about native villages.

While with the Smithsonian-Chrysler Expedition, Loveridge collected two males of this bird at Dodoma, 18–21 June 1926. These specimens are now in the U. S. National Museum.

During October, at Lumbo, Mozambique, Loveridge found a good many nests of the pied crow in the coconut palms.

### Corvus rhipidurus Hartert

*Corvus rhipidurus* Hartert, Bull. Brit. Ornith. Cl., **39**, 1918, p. 21: Massaua.

"Collected at West Kenya in 1915 for the Nairobi Museum." (A.L.)

This is one of the southernmost records for the fantailed raven.

### Corvultur albicollis (Latham)

*Corvus albicollis* Latham, Ind. Orn., **1**, 1790, p. 151: Africa.

1 ♀, Morogoro, Tanganyika Territory, 5 July 1917.
1 ♂, Morogoro, Tanganyika Territory, 26 February 1918.
1 ♀, Mtali's, Tanganyika Territory, 9 October 1922.

"Also seen at Kilosa and collected at Mbulu's." (A.L.)

The female from Mtali's has the head strongly tinged with a bronzy-purplish sheen.

The white-necked raven is a common, widely distributed species throughout East Africa. It is something of a scavenger in its feeding habits and consequently often gathers around settlements and native compounds.

## Family PARIDAE. Titmice

### Parus niger insignis Cabanis

*Parus* (*Pentheres*) *insignis* Cabanis, Journ. f. Ornith., 1880, p. 419: S. W. Africa; Malandje (see Reichenow, Vög. Afr., **3**, 1905, p. 513).

1 ♂, Karum, Mwanza, Tanganyika Territory, 3 December 1922.

This specimen is intermediate between *insignis* and *purpurascens*, but, on the whole, is nearer the former. Van Someren[1] records *insignis* from Southern Ankole, just a little to the north of Bukoba. Sclater[2] on the other hand does not record *insignis* from north of the Katanga and Nyasaland.

The bird is in rather fresh, unabraded, plumage.

### Parus albiventris albiventris Shelley

*Parus albiventris* Shelley, Ibis, 1881, p. 116: Ugogo.

1 ♂, 1 ♀, Ngong Forest, near Nairobi, Kenya Colony, 24 July 1919.

These two specimens are of the typical race, the wing length being 84 mm., in the male, and 77 mm., in the female. The latter is in extremely abraded condition and is in an early stage of molt. Probably its wing length would be greater than 77 mm., if the remiges were fresh and unworn. The male is in fresher plumage, but this is due to the fact that it is much farther along in its molt, but it still shows signs of incomplete ecdysis.

This race lives in the bushveld of the interior of Kenya Colony and northern Tanganyika Territory, while the smaller form *curtus* is found in the coastal belt of southern Kenya Colony, inland to Taveta.

### Parus rufiventris pallidiventris Reichenow

*Parus pallidiventris* Reichenow, Journ. f. Ornith., 1885, p. 217: Kakoma, Tabora district, Tanganyika Territory.

1 ♂, Kilosa, Tanganyika Territory, 12 January 1921.
1 ♀ (?), Kilosa, Tanganyika Territory, 24 January 1921.
"Fairly common at Kilosa." (A.L.)

The male is much darker than the female, both above and below. The former specimen is in molt.

[1] Nov. Zool., **29**, 1922, p. 204.
[2] Syst. Avium Aethiop., part ii, 1930, p. 641.

As far as I have been able to discover, Kilosa is the northeastern-most locality whence this bird has been recorded. According to Sclater,[1] the form ranges from the Tabora district south through Nyasaland to Mashonaland. I have seen no comparative material of *masukensis* or *rovumae*, and therefore cannot form any opinion as to the variational limits of these races.

The dimensions of the two birds are as follows: male—wing 83.0, tail 62.0, culmen 12.5, tarsus 19.0; female—wing 76.5, tail 61.5, culmen 12.0, tarsus 19.0 mm.

### Parus fringillinus Fischer and Reichenow

*Parus fringillinus* Fischer and Reichenow, Journ. f. Ornith., 1884, p. 56: base of Mt. Meru, Arusha, Tanganyika Territory.

1 ♀, Dodoma, Tanganyika Territory, 5 December 1921.
1 ♂, Sagayo, Mwanza, Tanganyika Territory, 25 October 1922.

"Only two examples of this rare species were encountered; both were in open thorn-bush steppe." (A.L.)

These two specimens constitute a definite extension of known range for the species, which was previously recorded only from the Arusha-Kilimanjaro area, the Southern Guaso Nyiro River, and the Kedong valley.

The December bird is more abraded than the October one, which is in fairly fresh plumage. The breeding season in the Arusha district appears to be in late November. The dimensions of the present specimens are as follows: male—wing 72.5, tail 49.0, culmen 13.0, tarsus 18.0; female—wing 70.0, tail 52.5, culmen 12.0, tarsus 19.0 mm.

### Anthoscopus roccatii taruensis van Someren

*Anthoscopus rocatti taruensis* van Someren, Bull. Brit. Orn. Cl., **41**, 1921, p. 112: Samburu, eastern Kenya Colony.

1 ♂, Kilosa, Tanganyika Territory, 31 December 1920.

This specimen was compared with *taruensis* by either Dr. Hartert or Mr. Goodson in Tring some years ago, and was found to agree in color but not in size, being appreciably larger. It has a wing length of 51 mm., while *taruensis* measures 45–48 mm., according to van Someren. It may be a new form, but I hesitate to describe it on the

[1] Syst. Avium Aethiop., part ii, 1930, p. 643.

basis of a single specimen with no comparative material. The species is new to Tanganyika Territory.

### Anthoscopus caroli sylviella Reichenow

*Anthoscopus sylviella* Reichenow, Orn. Monatsb., **12**, 1904, p. 27: Usafua, Tanganyika Territory.

1 unsexed, Kilosa, Tanganyika Territory, 29 January 1921.

The specimen is in slightly worn plumage.

## Family TIMALIIDAE. Babblers

### Turdoides plebeja kirki (Sharpe)

*Crateropus kirki* Sharpe, in Layard, Birds S. Afr., 2nd ed., 1876, p. 213: Zambesi country; type in British Museum from "Mazzaro."

2 ♂, Morogoro, Tanganyika Territory, 7 July–23 August 1917.
1 ♂, 1 ♀, Lumbo, Mozambique, 15 July 1918.
1 immature ♂, Kilosa, Tanganyika Territory, 30 December 1920.
1 ♂, 1 ♀, Muhalala, Tanganyika Territory, 3 March 1922.
"Also Bungu, Dar es Salaam, and the Uluguru Mountains." (A.L.)

The immature bird is quite different in color from the adults. It has the top of the head, nape, and entire back snuff brown; the feathers of the forehead and crown with fuscous—black shaft stripes but with no light tips; underparts grayish white suffused with tawny on the sides and flanks. A few adult feathers (grayish black with white tips) are present on the upper throat.

This race of the arrow-marked babbler occurs from the Zambesi valley to Nyasaland and eastern Tanganyika Territory, north along the coast to Lamu in Kenya Colony. In northwestern Tanganyika Territory, Urundi, Ruanda, etc., it is replaced by *emini*, a much darker form.

The two adults from Lumbo are in very fresh plumage; the young bird from Kilosa is much abraded and is just commencing to molt.

The bird from the Usambara Mountains recorded by Grote[1] as *hypostictus* is probably *kirki*.

Loveridge[2] found a nest with eggs at Lumbo on 22 October, and another at Morogoro on 23 March.

[1] Journ. f. Ornith., 1921, p. 136.
[2] Proc. Zool. Soc. Lond., 1922, p. 845.

### Turdoides plebeja emini (Neumann)

*Crateropus plebeius emini* Neumann, Journ. f. Ornith., 1904, p. 549: Wala River, Unyamwezi district, Tanganyika Territory.

1 ♂, Kabura, Mawokota, Uganda, 23 August 1919.

This specimen is in molt, and is therefore in poor condition for study.

According to van Someren,[1] this bird is not common in Uganda. The breeding season there appears to be in March and April.

### Turdoides melanops sharpei (Reichenow)

*Crateropus sharpei* Reichenow, Journ. f. Ornith., 1891, p. 432: Kakoma, Tabora district, Tanganyika Territory.

1 ♂, Lasicalet, Buddu, Uganda, 28 August 1919.
2 ♀, Sanga, Ankole, Uganda, 24 October 1919.
1 ♂, Kome Island, Mwanza, Tanganyika Territory, 23 November 1922.
1 ♂, Bukoba, Tanganyika Territory, 30 December 1922.
1 ♂, 1 ♀, Chantwara, Bukoba, Tanganyika Territory, 5 January 1923.
1 ♀, Bukoba, Tanganyika Territory, 30 January 1923.

In the Kikuyu district, Kenya Colony, this race is replaced by a somewhat darker backed form, *clamosa*.

This form of the black-faced babbler is a common bird in Uganda, where it has been found nesting in May and in September.

The wings of one of the Sanga females are in molt, indicating that the breeding season was over by October 24.

### Turdoides hypoleuca (Cabanis)

*Crateropus hypoleucos* Cabanis, Journ. f. Ornith., 1878, pp. 205, 226: Kitui, Ukamba, Kenya Colony.

1 ♂, Nairobi, Kenya Colony, 20 September 1920.

"Also near Fort Hall; specimen in Nairobi Museum." (A.L.)

*Crateropus hypoleucus rufuensis* Neumann[2] is considered as a synonym.

This pied babbler occurs from the upper Pangani River, Usegua, and the Kilimanjaro area to Kikuyu, Ukamba, and south Kenya Provinces of Kenya Colony.

[1] Ibis, 1916, p. 464.
[2] Orn. Monatsb., 1906, p. 148: Usegua.

This specimen is in molt; the old feathers are extremely abraded, contrasting markedly with the dark, new ones.

The breeding season near Nairobi is from December to March.

### Pseudoalcippe atriceps (Sharpe)

*Turdinus atriceps* Sharpe, Bull. Brit. Orn. Cl., **13**, 1902, p. 10: Ruwenzori.

1 ♂, 1 ♀, Singo, Ruanda, Uganda, 25 September 1919.

Iris brown; upper mandible black, lower mandible gray; feet gray.

The Ruwenzori hill-babbler occurs from the Kivu volcanoes north through Ruanda and the highlands of the eastern Belgian Congo to Ruwenzori and to southern Ankole in southwestern Uganda. It is not very common in Uganda, being more numerous in the Kivu. district. Like so many of the mountain birds of central Africa, it reappears in the highlands of Cameroon (Genderu and Banso Mountains).

On Ruwenzori, Woosnam[1] found it from, " . . . 6,500 to 9,000 feet, frequenting the forest zone and occasionally the lower part of the bamboo . . . going about in small parties of four or five individuals. They hop along through the ferns and tangled vegetation . . . "

Young birds have the crown and nape dark brown instead of black as in the adults. The present two examples are fully adult and have the following dimensions: male—wing 69, tail 65, culmen 14, tarsus 21 mm.; female—wing 66, tail 56, culmen 14, tarsus 22.5 mm.

Lynes[2] collected a male about to breed, in December, at Njombe.

### Pseudoalcippe abyssinicus abyssinicus (Rüppell)

*Drymophila abyssinica* Rüppell, N. Wirbelth., Vögel, 1840, p. 108, pl. xl, fig. 2: Simien, Ethiopia.

1 ♀, Bungu, Usambara Mountains, Tanganyika Territory, September 1921.

"Also Tumutumu, Kenya Colony." (A.L.)

Grote[3] has separated the birds of the Usambara Mountains from typical *abyssinicus* under the name *micrus* on the basis of supposedly smaller size. He writes that the latter birds have wings 66–68 mm.,

[1] Trans. Zool. Soc. Lond., **19**, 1910, p. 381.
[2] Journ. f. Orn., **82**, 1934, Sonderheft, p. 74.
[3] Orn. Monatsb., **36**, 1928, p. 77.

in length as against 72–76 mm. in Ethiopian birds. Sclater[1] considers *micrus* a synonym of *abyssinicus*. The present specimen has a wing length of 65 mm., and would therefore appear to corroborate Grote's findings. However, a male *abyssinicus* from Aletta, Ethiopia, has this dimension only 66 mm., so the difference is nil. I agree with Sclater that *micrus* is unrecognizable. The same is true of the Kilimanjaro "subspecies" *kilimensis* Shelley.

This little hill-babbler reaches its southern limits in the Usambara Mountains. It is a mountain forest bird, and consequently its range is very discontinuous.

### Pseudoalcippe stierlingi (Reichenow)

*Turdinus stierlingi* Reichenow, Orn. Monatsb., **6**, 1898, p. 82: Iringa, Tanganyika Territory.

1 ♀, Uluguru Mountains, Tanganyika Territory, 23 May 1921.
1 ♂, Uluguru Mountains, Tanganyika Territory, 3 June 1921.

Hartert[2] described the Uluguru birds as a race *P. s. uluguru*, of which the present pair are topotypes. His material consisted of a single female of *uluguru* which was compared with the types of *stierlingi* in Berlin by Neumann. I have seen 7 specimens from the Uluguru Mountains and find the race *uluguru* is not valid. The characters by which it was said to differ from the nominate form are those of larger size; wing 70 instead of 64–66 mm.; bill larger, and upper parts a little brighter rufous. Five males from the Uluguru Mountains have wings of from 61 to 65.5 mm.; two females measure 64 mm., each, in this respect.

### Pseudoalcippe pyrrhopterus (Reichenow and Neumann)

*Callene pyrrhoptera* Reichenow and Neumann, Orn. Monatsb., **3**, 1895, p. 75: Mau, Kenya Colony.

1 ♂, Ruanda, Uganda, 28 September 1919.

Iris brown; bill black; feet gray.

Neumann's Kivu race *kivuensis* is not distinguishable. He compared his type with immature instead of adult birds. Likewise Reichenow's *tanganyicae* is also a synonym.

[1] Syst. Avium Aethiop., part ii, 1930, p. 364.
[2] Bull. Brit. Orn. Cl., **42**, 1922, p. 50.

This hill-babbler occurs from Ruwenzori south to Ruanda, and the highlands west of Lake Tanganyika, and east to Mt. Elgon, Mau, Aberdare Mountains, Nandi, and the Kaimosi-Kakamega district, in Kenya Colony. Granvik[1] has separated the Elgon birds on the basis of larger size and brighter reddish-brown dorsal coloration. I have seen no Elgon specimens, but Sclater[2] considers *elgonensis* a synonym of *pyrrhoptirus*. The present specimen has a wing length of 72 mm., while Granvik's Elgon males measure 73 and 78 mm., respectively.

### Argya rubiginosa emini (Reichenow)

*Argya rubiginosa emini* Reichenow, Orn. Monatsb., **15**, 1907, p. 30: Scamuja, Unyamwesi district, Tanganyika Territory.

1 ♂, 1 ♀, Nduguyu River, Mkalama, Tanganyika Territory, 14 October 1922.

"Also Sanga and Sagayo. The female from Nduguyu River held a perfectly formed, pure white egg." (A.L.)

The present race of the rufous chatterer is a very scarce bird in collections, being known only from Scamuja and the three localities mentioned above. As Hartert has pointed out,[3] *emini* differs from *rubiginosa* in having a slenderer bill, the forehead and most of the crown grayish with pale tips to the feathers, more grayish lores, and shorter wings. The present male has wings 81 mm. in length, the female 82 mm.

### Argya rubiginosa heuglini Sharpe

*Argya heuglini* Sharpe, Cat. Bds. Brit. Mus., **7**, 1883, p. 391: Zanzibar.

"One collected at Dar es Salaam, 4 July 1918, now in Nairobi Museum." (A.L.)

### Argya aylmeri mentalis Reichenow

*Argya mentalis* Reichenow, Journ. f. Ornith., 1887, p. 75: Soboro, Kondoa Irangi district, Tanganyika Territory.

1 ♂, 1 ♀, Mbonoa, Singida, Tanganyika Territory, 29 September 1922.
1 ♀, Dodoma, Tanganyika Territory, 7 July 1921.

"Also Kinyambwa. Common at Dodoma." (A.L.)

[1] Journ. f. Ornith., 1923, Sonderheft, p. 256.
[2] Syst. Avium Aethiop., part ii, 1930, p. 365.
[3] Bull. Brit. Orn. Cl., **43**, 1923, p. 134.

This form of the scaly chatterer is darker than the typical race of Somaliland, Arussi-Gallaland, and northern Kenya Colony. I consider *keniana* Jackson and *loveridgei* Hartert as synonyms of *mentalis*.

The birds listed above are in somewhat worn plumage.

Nothing appears to be known regarding the habits of this babbler, except that it seems to be decidedly uncommon in most parts of its range. It is therefore rather remarkable that Loveridge should have found it numerous at Dodoma.

### Neocichla gutturalis angustus Friedmann

*Neocichla gutturalis angustus* Friedmann, Journ. Wash. Acad. Sci., **20**, 1930, p. 434: Muhalala, Tanganyika Territory.

1 ♂, 1 ♀, Muhalala, Kilimatinde, Tanganyika Territory, 3 March 1922.

This bird is considered a babbler by Sclater[1] but it is by no means certain that it is not more nearly related to the starlings.

The male is in the plumage described by Büttikofer[2] as *N. kelleni*. This is supposed to be the immature plumage of *gutturalis*, but Neave[3] considers *kelleni* a distinct species, as all the specimens he saw (a flock of about twenty) were in the spotted *kelleni* plumage.

The present male differs from the figure given by Büttikofer (*loc. cit.*) in being pale buffy gray on the rump and lower back and on the edges of the feathers of the upper back, instead of bright tawny.

Schalow[4] in his report on Böhm's East African collections, describes a juvenal *gutturalis* from Kakoma, Tanganyika Territory, which approximates that of "*kelleni*," and agrees with the present male, except that he writes that the head is dark brown whereas it is black in the present example, and likewise the neck is black and white, not brown and white as in his description.

It seems, then, that *kelleni* is really the young of *gutturalis*, but judging from the present male, it appears as though the *kelleni* type of plumage is worn for at least two years as the present example is in no way juvenal in appearance, and has adult primaries and generally fresh plumage. It also has the tip of the bill black, not wholly yellow, as in Büttikofer's plate.

Aside from the evidence afforded by Schalow's notes, the geograph-

[1] Syst. Avium Aethiop, part ii, 1930, p. 359.
[2] Notes Leyden Museum, **10**, note 22, 1888, p. 229, pl. ix, fig. 1.
[3] Ibis, 1910, p. 137.
[4] Journ. f. Ornith., 1883, pp. 357–358.

ical evidence would indicate the identity of *kelleni* and *gutturalis*. It would be very unusual, to say the least, if the two sole members of a genus were to have precisely the same ranges.

The measurements of these two specimens are as follows: male—wing 108.5, tail 82, culmen 23 mm.; female—wing 109, tail 87, culmen 22.5 mm. The female is molting.

Inasmuch as the female is undergoing a complete molt, and the male is in very fresh plumage, it may be inferred that the breeding season had ended no great length of time before the birds were shot (3 March). Böhm[1] collected a male with enlarged testes in the beginning of December and found juvenal birds out of the nest in March.

Only a few collectors have obtained this species in Tanganyika Territory, the most recent being Schuster[2] who met with it in Unyamwesi, and Carnochan who collected a pair near Tabora (now in the American Museum of Natural History). Schuster saw a flock of about 20 birds at Senga on 20 June, obviously a sign of post-breeding gregariousness.

The present race differs from the nominate, Angolan, form in having very much narrower white tips to the rectrices. In two Angolan birds the white tips of the outermost rectrices measure 12 to 15 mm. in width (measured along the shaft), while in five Tanganyikan specimens they measure from .5 to 5.0 mm. The nominate race is conspicuously a bird with white tips to the tail feathers; *angustus* is often practically devoid of tips or, at most, has them in the form of narrow bands.

I have seen no material from the Katanga or from Northern Rhodesia and cannot say to which form the birds of those regions belong. I have seen *angustus* from the following localities (all in Tanganyika Territory): Muhulala, Kilimatinde, Manyoni, Kakoma, and Kawewe's, 35 miles south of Tabora.

### Illadopsis stictigula stictigula (Reichenow)

*Turdinus stictigula* Reichenow, Orn. Monatsb., **14**, 1906, p. 10: Mbaramo, Usambara Mountains.

1 ♀, Uluguru Mountains, Tanganyika Territory, 30 May 1921.
1 ♀, Bagilo, Uluguru Mountains, Tanganyika Territory, 15 May 1922.

This very distinct species of *Illadopsis* is restricted, as far as known,

[1] Journ. f. Ornith., 1883, pp. 189–190.
[2] Journ. f. Ornith., 1926, p. 738.

to the Usambara and the Uluguru Mountains, the Uzungwe and Ukinga range, and Mt. Rungwe, Tanganyika Territory. Aside from the original small series collected by Roehl, the present race is known only from the present two examples, and two others also taken by Loveridge.[1]

Bangs and Loveridge[2] have described *I. s. pressa* from the highlands of southwestern Tanganyika Territory on the basis of its smaller size and darker and duller coloration.

SUAHELIORNIS KRETSCHMERI KRETSCHMERI (Reichenow and Neumann)

*Phyllostrephus kretschmeri* Reichenow and Neumann, Orn. Monatsb., **3**, 1895, p. 75: Kibosho, Kilimanjaro.

1 ♂, 1 ♀, Bungu, Usambara Mountains, Tanganyika Territory, September 1921.

This peculiar bird is found, as far as known, only on Mt. Kilimanjaro and the Usambara and Uluguru Mountains, Tanganyika Territory. In the extreme southeastern part of that country another race replaces it—*griseiceps* Grote, characterized by its much grayer head and underparts. I have seen no material of the latter form, but its characters appear, from description, to be well marked.

Sclater[3] considers *S. albigula* Grote as of uncertain status. It was described from the Usambara Mountains, and while it is rather puzzling to find two species of this genus living together in one small mountain area, a similar condition is to be met with in Upper Guinea where *Macrosphenus concolor* and *M. kempi* occur side by side.

Grote[4] writes that a specimen from the western slopes of the Usambara Range differs from the type (from Kilimanjaro) in having the head slightly more grayish, less washed with greenish, and the longitudinal streaks on the underparts greener and more distinct. I have seen no Kilimanjaro birds. The present female has the throat and the ground color of the breast and abdomen grayer than in the male, making the greenish stripes stand out more distinctly.

[1] Ibis, 1928, p. 96.
[2] Proc. N. Eng. Zool. Cl., **12**, 1931, p. 94.
[3] Syst. Avium Aethiop., part ii, 1930, p. 366.
[4] Journ. f. Ornith., 1921, p. 136.

## Family PYCNONOTIDAE. Bulbuls

### Pycnonotus tricolor minor Heuglin

*Pycnonotus nigricans* var. *minor* Heuglin, Orn. Nordost. Afr., **1**, 1869, p. 398: Bahr el Abiad, that is, Upper White Nile.

1 ♂, 1 immature ♀, Kome Island, Mwanza, Tanganyika Territory, 23 October 1922.

These two specimens constitute the first records for *minor* for north-central Tanganyika Territory. However, inasmuch as Reichenow's so-called race *tanganjicae* is now known to be identical with *minor*, this record is not remarkable. The form occurs south to Usumbura and to Nyanza on Lake Tanganyika.

Both specimens are in very worn plumage.

Van Someren[1] has recently reviewed the races of the Kenyan and Ugandan yellow-vented bulbuls, but does not include Tanganyika Territory in the range of *minor*.

### Pycnonotus tricolor pallidus Roberts

*Pycnonotus layardi pallidus* Roberts, Journ. S. Afr. Ornith. Union, **8**, 1912, p. 49: Boror, Mozambique.

1 ♂, 1 ♀, Lumbo, Mozambique, 30 August 1918.

I agree with van Someren[2] that *pallidus* is a recognizable, although somewhat intermediate form, connecting *layardi* with *micrus*. It resembles the former but is slightly paler and has the lower abdomen more washed with yellow posteriorly.

Both birds are in worn plumage.

Loveridge found this bulbul very abundant at Lumbo. Five nests, each containing two eggs, were found there on 28 October.[3]

### Pycnonotus tricolor micrus Oberholser

*Pycnonotus layardi micrus* Oberholser, Proc. U. S. Nat. Mus., **28**, 1905, p. 891: Taveta, Kenya Colony.

1 ♂, Morogoro, Tanganyika Territory, 15 June 1917.
1 ♀, Mombasa, Kenya Colony, 25 May 1918.

"Also Dar es Salaam, Kilosa, Dodoma, and Tabora." (A.L.)

[1] Nov. Zool., **37**, 1932, p. 347.
[2] Nov. Zool., **29**, 1922, p. 190.
[3] Proc. Zool. Soc. Lond., 1922, p. 845.

This is the race of the coastal plain of Southern Kenya Colony and of Tanganyika Territory south to Dar es Salaam and Zanzibar, and inland to Kilosa, Dodoma, and even to Tabora, where it intergrades with *minor*.

On 7 January 1923, at Kilosa, Loveridge found a nest of this geelgat with three eggs. A week before he had found another nest with two eggs. The yellow-vented bulbul breeds during the greater and lesser rains, if not all the year round. Many nests were found at Morogoro on the following dates: two young birds in a nest in boughs of a flamboyant, 8 December 1917; two nests, one with two eggs and one with three, in similar sites, on 14 December 1917; nest with one nestling in a banana plant on 16 January 1918; a nest with two eggs on 26 March; and one with one egg on 11 April.[1]

### Pycnontus tricolor fayi Mearns

*Pycnonotus layardi fayi* Mearns, Smiths. Misc. Coll., **56**, no. 20, p. 7, 1911: Fay's Farm, Njabini, Kenya Colony.

1 ♂ ?, Ngong, near Nairobi, Kenya Colony, 21 September 1915.
1 ♀, Ngong, near Nairobi, Kenya Colony, 21 July 1919.
1 ♀, Uluguru Mountains, Tanganyika Territory, 14 May 1921.
1 ♂, Bungu Usambara Mountains, Tanganyika Territory, September, 1921.

"Also Tumutumu." (A.L.)

The Uluguru and Usambara Mountain birds are the first records for *fayi* in Tanganyika Territory and are of interest in that they indicate again that altitude is the important factor in the distribution of subspecies in eastern Africa. Quite naturally, a student having specimens from two localities as close together as Morogoro and the Uluguru Mountains and finding them different, while the latter birds agree with others from as distant a place as Mt. Kenya or Mau Escarpment, would suppose the variations were wholly individual and that no races were admissible. However, the thing is perfectly clear and simple when we remember that *fayi* is a highland race and *micrus* a lowland form.

In the Ibis for 1928 (p. 91) I recorded two birds from Amani and Bumbuli, Usambara Mountains, as *micrus*, but on reexamination I find them to be *fayi*.

[1] Recorded by Loveridge, Proc. Zool. Soc. Lond., 1922, p. 845.

The July bird from Ngong is in molt; the September bird is abraded as is also the September specimen from Bungu. The Uluguru specimen is in fresh plumage.

### Atimastillas flavicollis pallidigula (Sharpe)

*Xenocichla pallidigula* Sharpe, Bull. Brit. Orn. Cl., **7**, 1897, p. 7: Entebbe.

1 ♀, Masomuntu Mukubwa, Ruanda, Uganda, 26 September 1919.
1 ♀, Kome Island, Mwanza, Tanganyika Territory, 22 October 1922.
1 ♂, Kabare, Bukoba, Tanganyika Territory, 15 January 1923.

The bird from Kome, Mwanza is practically a topotype of *shelleyi* Neumann, and as it does not uphold the supposed characters of that form, it follows that *shelleyi* must be considered as a synonym of *pallidigula*. Gyldenstolpe[1] found a bird from Rutshuru (in the range of *pallidigula*) that agreed with the characters of *shelleyi*, while other specimens taken at the same place and time were typical *pallidigula*. It is therefore evident that Neumann's form has no existence in fact.

Bannerman[2] likewise found difficulty in distinguishing *shelleyi* from *pallidigula* but retained both tentatively. Sclater[3] recognizes *shelleyi*, but this is undoubtedly a mistake.

In the region covered by the present collection the yellow-throat bulbul occurs only in western Tanganyika Territory, Ruanda, Uganda and western Kenya Colony (Karaungu, Fort Ternan, Kimiriri, and Nyarondo, whence van Someren has recorded it).

The specimen from Kome is in molt; the September bird from Ruanda is rather abraded; the January bird from Bukoba is in fairly fresh plumage.

This species is a forest-dwelling form as a rule, but Granvik[4] found it in a swampy area in the " . . . acacia country, where palms, bushes and trees formed a thick vegetation . . . "

Van Someren[5] found it nesting in May in Uganda.

### Phyllastrephus terrestris suahelicus Reichenow

*Phyllostrephus capensis suahelicus* Reichenow, Vög. Afr., **3**, 1904, p. 405: Msua, Bagamoyo district, Tanganyika Territory.

1 ♂, 1 ♀, Kilosa, Tanganyika Territory, 1–17, February 1921.

[1] Kungl. Sv. Vet. Akad. Handlngr., 1924, p. 175.
[2] Rev. Zool. Africaine, **12**, 1924, p. 31.
[3] Syst. Avium Aethiop., part ii, 1930, p. 379.
[4] Journ. f. Ornith., 1923, Sonderheft, p. 205.
[5] Ibis, 1916, pp. 435–436.

I have not sufficient material to attempt a study of the races of this bulbul and cannot say if *intermedius* Gunning and Roberts and *rhodesiae* Roberts are valid or not. Sclater[1] regards them both as synonyms of *suahelicus*.

Sclater suggests that *strepitans* may be really a race of *terrestris*, but in this he is mistaken as the two occur together in coastal Tanganyika Territory (Dar es Salaam-Bagamoyo area).

The present form differs from the nominate race of South Africa in having the upper parts somewhat washed with rusty brown. It is interesting to note that the female is more rufescent than the male which is more dusky olive above. The male is much larger than the female. The dimensions are as follows: male—wing 90, tail 89, culmen 24 mm.; female—wing 81.5, tail 85, culmen 20 mm.

Both specimens are in rather worn plumage.

This species lives in thick bush country, and goes about in pairs or small groups, being widely distributed but nowhere very numerous.

### Phyllastrephus strepitans (Reichenow)

*Criniger strepitans* Reichenow, Orn. Centralb., 1879, p. 139: Malindi, Kenya Colony.

1 ♀, Dar es Salaam, Tanganyika Territory, 25 June 1918.
1 ♀, Kilosa, Tanganyika Territory, 4 January 1921.
1 ♂, Kilosa, Tanganyika Territory, 26 January 1921.

The bird from Dar es Salaam is a topotype of *P. sharpei* Shelley, which, however, is not distinct from *P. strepitans*.

This scrub bulbul is rather variable and has, as a consequence, been split into a number of forms, but none of them are valid, the extent of individual variation being greater than that of geographical variation. It occurs in scrub country from the northern half of Tanganyika Territory through the drier portions of Kenya Colony to Somaliland, Gallaland, southern Shoa, and the Upper White Nile and adjacent portions of the northeastern Uele district of the Belgian Congo.

The Dar es Salaam specimen is in fresh plumage and is slightly darker above than the Kilosa birds, both of which are commencing to molt.

[1] Syst. Avium Aethiop., part ii, 1930, p. 382.

### Phyllastrephus flavostriatus flavostriatus (Sharpe)

*Andropadus flavostriatus* Sharpe, Ibis, 1876, p. 53: Macamac, Transvaal.

1 ♂, Uluguru Mountains, Tanganyika Territory, 18 May 1921.
1 ♂, 1 ♀, Bungu, Usambara Mountains, Tanganyika Territory, September 1921.

In the Ibis for 1928 (p. 89) I referred birds of this species from the Usambara Mountains to *P. f. tenuirostris* Fischer and Reichenow. I have not sufficient material to decide whether or not *tenuirostris* is valid. It was described[1] from Lindi in southeastern Tanganyika Territory. It is questionable, therefore, if the present birds, even if distinguishable from South African ones, are *tenuirostris*, or are without a name and *tenuirostris* a synonym of *flavostriatus*.

Van Someren[2] writes that, according to Oberholser, this species ranges north to Kenya Colony, but I have been unable to find an reference, by Oberholser, or others, to this bird in Kenya Colony. As far as I know, the Usambara Mountains are the northernmost locality for this species.

The bird from the Uluguru Mountains is molting; the others are not, but are in fairly fresh plumage.

### Phyllastrephus sucosus sucosus Reichenow

*Phyllastrephus cabanisi sucosus* Reichenow, Journ. f. Ornith., 1903, p. 544: Bukoba, Tanganyika Territory.

1 ♀, Kabare, Bukoba, Tanganyika Territory, 12 January 1923.

The nominate form of the small olive bulbul is found in the forested country of Uganda from Mt. Elgon to Toro and Ruwenzori and south to the Bukoba district, Ruanda, Urundi (?) and Lake Kivu.

Granvik[3] writes that a female from Mt. Elgon has a wing length of 80 mm., while a male from the same place has a wing 88 mm. long. The present female measures 75 mm. in this respect, and it may be that Elgon birds are a larger, undescribed race. I have no Elgon material to work with and cannot settle this point.

The present bird was breeding when collected. It was taken together

[1] Journ. f. Ornith., 1884, p. 262.
[2] Nov. Zool. **29**, 1922, p. 185.
[3] Journ. f. Ornith., 1823, Sonderheft, p. 206.

with its nest and two eggs. The nest was composed of pieces of dry sedges and leaves and was lined with very coarse rootlets (as described by Loveridge[1]).

### Phyllastrephus fischeri placidus (Shelley)

*Xenocichla placidus* Shelley, Proc. Zool. Soc. Lond., 1889, p. 363: Mt. Kilimanjaro.

1 ♂, 1 ♀, Ngong Forest, Kenya Colony, 22 July 1919.
1 ♀, Tumutumu, Kenya Colony, October 1920.
1 ♂, 1 ♀, Uluguru Mountains, Tanganyika Territory, 14 June 1921.

*P. f. cognatus* Grote[2] described from Mlalo in the Usambara Mountains is said to differ from *placidus* in having the sides and flanks noticeably darker, more of a dusty olive green as compared with the grayish olive in the latter. I have seen no Usambara birds, but the chances are that the Uluguru specimens are like those of the former range, in which case *cognatus* cannot be upheld. It would be very strange since the birds of Mt. Kilimanjaro and of the Uluguru Mountains are alike, if the Usambara range (in between them geographically) were to have a distinct race. In a series of some 18 specimens from the Mau Escarpment, Mt. Kenya, Mt. Kilimanjaro and the Uluguru Mountains, I find the color of the sides and flanks is rather variable.

Reichenow's form *munzneri* described[3] from Sanyi, in the Mahenge district of Tanganyika Territory, is likewise indistinguishable from *placidus*.

This bulbul occurs in the mountains and high country generally wherever there is forest, from Mt. Kenya south to Nyasaland. In the low coastal forests it is replaced by *fischeri*, a paler race.

Both Uluguru specimens are in fairly fresh plumage; the Tumutumu one is rather abraded. The two Ngong birds are darker above, and have shorter bills than the Uluguru specimens.

### Phyllastrephus cerviniventris cerviniventris Shelley

*Phyllostrophus cerviniventris* Shelley, Ibis, 1894, p. 10, pl. ii, fig. 1: Zomba, Nyasaland.

1 ♂, 1 ♀, Uluguru Mountains, Tanganyika Territory, 15 May 1921.

[1] Proc. Zool. Soc. Lond. 1923, p. 906.
[2] Orn. Monatsb., 1919, p. 63.
[3] Orn. Monatsb., 1916, p. 181.

The nominate race of this bulbul occurs sparingly from Nyasaland and Northern Rhodesia through the Katanga and Tanganyika Territory, north to the Teita area in southeastern Kenya Colony. In the vicinity of Mt. Kenya it is replaced by a darker form, *lönnbergi*. It is a denizen of the scrub country and seems to be rather uncommon throughout its range.

The present specimens are in fairly fresh plumage.

### Arizelocichla nigriceps neumanni Hartert

*Arizelocichla neumanni* Hartert, Bull. Brit. Orn. Cl., **42**, 1922, p. 50: Uluguru Mountains, Tanganyika Territory.

1 ♂, 1 ♀, Bagilo, Uluguru Mountains, Tanganyika Territory, 15 May 1922.

The present race of the mountain greenbul is known only from the Uluguru Mountains, and from a total of 10 specimens, all collected by Loveridge. Of these the type from Tring is now in the American Museum of Natural History, the other 9 (including the present 2) are in the Museum of Comparative Zoölogy. The Uluguru birds resemble typical *nigriceps* but are somewhat larger, lack the white stripes on the auriculars, and also lack the pale eye-ring.

The nominate form occurs on Kilimanjaro and on the higher country of the Southern Guaso Nyiro River. In the Usambara range it is replaced by a form *percivali* which has the crown brownish-gray instead of blackish, and has a gray superciliary stripe dorsally bordered by a black one. In the highlands of Nyasaland, the race *fusciceps* occurs. This is characterized by its gray crown and white eye-ring.

The dimensions of the present specimens are as follows: male—wing 90, tail 88.5, culmen 19 mm.; female—wing 90, tail 93, culmen 20 mm.

At Phillipshof, in the Usambara Mountains, *percivali* was found nesting on 31 December. The probabilities are that *neumanni* is similar in its type of nest, etc., and breeding season. Loveridge[1] has described the nest of *percivali* (under the name *nigriceps*) as composed " . . . of tendrils and coarse grass-stalks, internally . . . lined with fine grasses. Outside it measured 130 x 55 mm.; inside 70 x 30 mm. . . . a full clutch would consist of three eggs. These measured 25 x 6 mm., (16?) were pinkish-white in ground-colour,

[1] Proc. Zool. Soc. Lond., 1928, p. 77.

but this was so heavily overlaid with brown and purplish mottling as to be almost obscured . . . "

ARIZELOCICHLA MILANJENSIS STRIIFACIES (Reichenow and Neumann)

*Xenocichla striifacies* Reichenow and Neumann, Orn. Monatsb., **3**, 1895, p. 74: Marangu, Kilimanjaro.

1 ♀, Morogoro, Tanganyika Territory, 1 August 1917.
1 ♂, Uluguru Mountains, Tanganyika Territory, 27 May 1921.
"Also Bungu." (A.L.)

The Kilimanjaro stripe-cheeked greenbul occurs in the mountain forests of Tanganyika Territory from Mt. Kilimanjaro south to Mt. Chiradzulu, in Northern Nyasaland. In the Mlanji highlands of Nyasaland and the Chirinda forest of Mashonaland, it is replaced by the nominate form. The typical race has a grayish crown, while *striifacies* has this area green in color.

The measurements of the present specimens are as follows: male—wing 92, tail 88, culmen 21 mm.; female—wing 92.5, tail 93, culmen 20.5 mm. Both are in fairly fresh plumage.

Van Someren[1] has recently obtained this bulbul in the lowland Taveta Forest on the Zumi River, and Moreau[2] has taken specimens in the Albizzia forest at Lyamungu, Kilimanjaro.

ARIZELOCICHLA MASUKENSIS ROEHLI (Reichenow)

*Andropadus roehli* Reichenow, Orn. Monatsb., **13**, 1905, p. 181: Mlalo, Usambara Mountains, Tanganyika Territory.

1 ♂, 1 ♀, Bungu, Usambara Mountains, Tanganyika Territory, September 1921.
"Also Bagilo, Uluguru Mountains, and Kilosa." (A.L.)

Roehl's mountain greenbul is known only from the Usambara and Uluguru Mountains. In the highlands north and northwest of Lake Nyasa it is replaced by typical *masukensis* from which it differs in having the throat pure grayish, not greenish gray, and in being paler generally below. Sclater[3] considers *kakamegae* Sharpe a third race of this species. I have seen no material of this form, but, judging from descriptions, I doubt if it is really conspecific with *masukensis*.

[1] Nov. Zool., **37**, 1932, p. 345.
[2] Proc. Zool. Soc. Lond. 1935 (1936), p. 876.
[3] Syst. Avium Aethiop., part ii, 1930, p. 389.

This bulbul must be a common bird in the Usambara Mountains as its discoverer, Pastor Roehl, collected no fewer than 193 specimens.[1]

Loveridge[2] found a nest on Mr. Lutindi in the Usambara range on 10 December. It was about, " . . . five feet from the ground in a sapling in open forest near the top of the mountain, *i. e.*, about 1,400 meters. The nest, which measured 3 x 3½ inches, was slung in a fork; it was made of fibre and rootlets and lined with finer black fibres, very much like horsehair; there is a little moss on the edges of the nest where it was attached to the branches. The two eggs, already well incubated, measured 25 x 16 mm., and were pinkish-white in ground-colour, heavily blotched with brown and black."

### Stelgidillas gracilirostris chagwensis (van Someren)

*Chlorocichla gracilirostris chagwensis* van Someren, Bull. Brit. Orn. Cl., **35**, 1915, p. 127: Nazigo Hill, Uganda.

1 ♂, Katabasungu, Buddu, Uganda, 2 November 1919.

This race is considered indistinguishable from the nominate form by Sclater[3] but other workers have found it to be recognizable. I have compared this specimen with two from Cameroon and I find it upholds the characters pointed out by van Someren. It is grayer below than typical *gracilirostris*, although it is not without an olive wash. Gyldenstolpe[4] examined 9 specimens of *chagwensis* and concluded that on the whole the race " . . . must be accepted, although the differences are very slight, some Kakamega birds being very close, indeed, to typical *S. g. gracilirostris.*"

In the Nandi-Elgon district this form intergrades with *percivali* of the highlands of central Kenya Colony. The latter is brighter olive green above than either *chagwensis* or *gracilirostris.*

### Chlorocichla flaviventris centralis Reichenow

*Chlorocichla centralis* Reichenow, Journ. f. Ornith., 1887, p. 74: Loeru, Kondoa Irangi, Tanganyika Territory.

2 ♂, Morogoro, Tanganyika Territory, 1–3 August 1917.
1 ♂, Dodoma, Tanganyika Territory, 25 December 1918.

"Also Nairobi, Mombasa, and Bungu." (A.L.)

[1] Recorded by Grote, Journ. f. Ornith., 1921, p. 132.
[2] Proc. Zool. Soc. Lond., 1923, p. 77.
[3] Syst. Avium Aethiop., part ii, 1930, p. 391.
[4] Kungl. Sv. Vet. Akad. Handlngr., 1924, p. 184.

While with the Smithsonian-Chrysler Expedition, Loveridge collected 1♂ and 3♀ at Dodoma, 18–23 June 1926, which are now in the United States National Museum.

The Dodoma birds are paler above than those from Morogoro, but with a small series of other birds, including the type of *C. f. meruensis*, I cannot find any correlation between geography and size or color variations, and therefore consider *mombasae* and *meruensis* as synonyms of *centralis*. The range of this form is therefore the southern half or so of Kenya Colony and the northern half of Tanganyika Territory.

The two Morogoro birds are in fresh plumage, the others are worn, and one of the June birds from Dodoma is molting the rectrices.

### Andropadus insularis insularis Hartlaub

*Andropadus insularis* Hartlaub, Orn. Beitr. Faun. Madagascar, 1861, p. 44: "w. coast Madagascar;" probably Zanzibar (see Reichenow, Vög. Afr., **3**, p. 409, footnote).

1 ♂, Dar es Salaam, Tanganyika Territory, 25 June 1918.

Sclater[1] gives the range of this bulbul as south to the Pangani River. The limits must be extended, in the light of the present specimen, to at least as far south as Dar es Salaam.

This form occupies the coastal belt from Dar es Salaam to a little north of the Pangani River, and also the island of Zanzibar. From Mombasa northwards to Lamu it is replaced by *subalaris*, characterized by its buffy yellow under wing coverts. The southern race of *oleaginus* ranges from the Zambesi Valley north through Mozambique and Tanganyika Territory to as far as Kilosa.

Van Someren[2] has recently found that Kenyan coastal birds are duller, less bright yellow, than Zanzibar and Dar es Salaam specimens, and for the former group he uses Reichenow's name *subalaris*.

### Andropadus insularis subalaris Reichenow

*Andropadus insularis subalaris* Reichenow, Journ. f. Ornith., 1903, p. 544: Malindi, Kenya Colony.

Loveridge collected a specimen of this form at Mombasa, Kenya Colony, on 24 May 1918, for the Nairobi Museum, where it now is.

[1] Syst. Avium Aethiop., part ii, 1930, p. 393.
[2] Nov. Zool., **37**, 1932, 345.

### Andropadus insularis oleaginus Peters

*Andropadus oleaginus* Peters, Journ. f. Ornith., 1868, p. 133: Lorenço Marques, Mozambique.

1 ♂, 1 ♂, Lumbo, Mozambique, 10 July 1918.

"Also Morogoro and Kilosa." (A.L.)

The female is in fresher plumage than the male.

Grote[1] found this bird to breed in February at Mikindani, in south-eastern Tanganyika Territory. On the Zambesi River Alexander[2] found this bulbul breeding around the middle of November.

Loveridge[3] found many nests of this bulbul and, " . . . five clutches of two eggs each taken; two would appear to be the normal number for a clutch. The eggs are white, scribbled and blotched with brown and faint purple at the larger pole, in some cases all over. The nest is small and shallow, composed of twigs and lined with fine rootlets." These notes were written at Lumbo on 28 October 1918.

### Andropadus curvirostris Cassin

*Andropadus curvirostris* Cassin, Proc. Ac. Sci. Phil., 1859, p. 46: Camma River, Gaboon.

1 ♂, Singo, Ruanda, Uganda, 25 September 1919.

Van Someren[4] in discussing the validity of *Andropadus alexanderi* Oustalet, writes that, " . . . in the original description it is stated that the under wing coverts are of the same colour as the breast, but I find that in my large series only twenty specimens have the under wing-coverts olive-green, all the others, yellowish . . . The type of *A. c. alexanderi* should be examined before one could form a definite opinion as to whether these birds are separable . . . I am . . . compelled to unite them; but it is possible that these Uganda birds will have to be recognized as a distinct race of *curvirostris*." The present specimen has yellow under wing coverts and agrees with a series from Gaboon and Cameroon. It appears, then, that *alexanderi*, if distinct from typical *curvirostris*, does not occur in Uganda and Ruanda, and

[1] Journ. f. Ornith., 1913, p. 137.
[2] Ibis, 1900, p. 72.
[3] Proc. Zool. Soc. Lond., 1922, p. 846.
[4] Nov. Zool., **29**, 1922, p. 187.

the fact that van Someren found the distinguishing character to be variable in Uganda birds suggests that *alexanderi* was based on an individual, or possibly age, variation.

### Stelgidocichla latirostris eugenia (Reichenow)

*Andropadus eugenius* Reichenow, Journ. f. Ornith., 1892, p. 53: Bukoba Tanganyika Territory.

1 ♂, Kabura, Mawokota, Uganda, 27 August 1919.
1 ♂, Singo, Ruanda, Uganda, 25 September 1919.
1 ♂, Ruanda, Uganda, 28 September 1919.
1 ♂, Kyadondo, Mengo, Uganda, 9 November 1919.

The Ugandan race of the yellow-whiskered bulbul occurs from Lake Kivu, through Urundi, Ruanda, Uganda (except the Semliki valley) east to the Kikuyu Escarpment in Kenya Colony and to Bukoba in Tanganyika Territory. In the highlands from Mt. Kenya to Nairobi it is replaced by a rather poorly differentiated, slightly larger and brighter form, *saturata*.

One Ruanda male has a wing length of 88 mm.; and a Uganda specimen of 91 mm.

### Stelgidocichla latirostris saturata Mearns

*Stelgidocichla latirostris saturata* Mearns, Smiths. Misc. Coll., **41**, no. 25, 1914, p. 6: Honi River, s.w. Mt. Kenya.

1 ♂, Ngong Forest, Kenya Colony, 12 July 1919.
1 ♀, Nairobi district, Kenya Colony, 24 August 1920.

"Also Tumutumu." (A.L.)

This race is only an average one in its characters, and requires series for its study. The present two specimens are barely distinguishable from those of *eugenia* recorded above. Wings—male 90, female 89 mm.

### Eurillas virens marwitzi (Reichenow)

*Andropadus marwitzi* Reichenow, Orn. Monatsb., **3**, 1895, 188: Marangu, Kilimanjaro.

1 ♂, 1 ♀, Bungu, Usambara Mountains, Tanganyika Territory, September 1921.

"Also Uluguru Mountains." (A.L.)

Sclater[1] considers *zombensis* and *marwitzi* as synonyms of *virens*, but this is wrong. Bannerman[2] goes to the other extreme, and considers *zombensis* specifically distinct from *virens*.

The present race inhabits Nyasaland and the mountain forests of Tanganyika Territory north to the Usambara range.

Van Someren[3] considers the birds of the Usambara Mountains as *marwitzi*, and calls the birds of the coastal forests *E. v. shimba*[4].

Recently the Zanzibar birds have been separated under the name *E. v. zanzibaricus* by Parkenham.[5]

### Eurillas virens holochlorus van Someren

*Eurillas virens holochlorus* van Someren, Nov. Zool., **29**, 1922, p. 189: Sezibwa Uganda.

1 ♂, Ndeza, Ankole, Uganda, 8 September 1919.

This race is more olive green, less yellow or grayish-yellow, below than *virens* and is larger than the typical form as well.

Gyldenstolpe[6] suggests that *holochlorus* may be a synonym of *marwitzi* Reichenow, described[7] from Kilimanjaro. In this he is mistaken as *marwitzi* is very close to *zombensis*, which, in turn, is very distinct from *holochlorus*.

The range of *holochlorus* takes in all of Uganda from the Toro district to Mt. Elgon.

## Family TURDIDAE. Thrushes

### Turdus libonyanus costae Rensch

*Turdus libonyanus costae* Rensch, Journ. f. Ornith., 1923, p. 99: Magogoni, Tanganyika Territory.

1 adult ♂, Morogoro, Tanganyika Territory, 22 October 1917.
1 immature ♂, Kilosa, Tanganyika Territory, 25 November 1920.
1 adult ♀, Kilosa, Tanganyika Territory, 1 December 1920.
1 adult ♂, Kilosa, Tanganyika Territory, 21 August 1921.
1 unsexed young, Msimba, Ilonga, Tanganyika Territory, 26 March 1923.

[1] Syst. Avium Aethiop., part ii, 1930, p. 395.
[2] Rev. Zool. Afr., **12**, 1924, p. 25.
[3] Nov. Zool. **37**, 1932, p. 346.
[4] Journ. E. Afr. and Uganda N. H. Soc., 1931, 197.
[5] Bull. Brit. Orm. Cl., **5**, 1935, p. 111.
[6] Kungl. Sv. Vet. Akad. Handlngr., 1924, p. 187.
[7] Orn. Monatsb., 1895, p. 188.

Three races of this thrush occur in Tanganyika Territory and adjacent parts of Kenya Colony and Uganda. They are as follows:

1. *T. l. costae:* The costal belt, inland to Kilosa, south to Lindi, north to Mombasa.

2. *T. l. cinerascens:* the rest of Tanganyika Territory except the Bukoba area west of Lake Victoria.

3. *T. l. centralis:* the Bukoba area, all of Uganda, the southern Sudan, western Kenya Colony, and southwestern Ethiopia.

The last of the three is the brightest colored and has the darkest breast. The race *cinerascens* is paler but equally large (wings 107–118 mm.), while *costae* is still paler and smaller (wings 100–108 mm.).

The immature bird from Kilosa is not fully grown and was probably about a month out of the nest when collected. It is much browner above than adults; has the middle of the throat pure white; the breast light ochraceous tawny, spotted with dark brown, and the upper abdomen and sides also spotted with dark brown, but less abundantly than the breast. The young Msimba bird is fully grown.

### Turdus libonyanus cinerascens Reichenow

*Turdus cinerascens* Reichenow, Orn. Monatsb., **6**, 1898, p. 82: Tabora, Tanganyika Territory.

2 ♂ ♂, 1 adult ♀, Kome Island, Mwanza, Tanganyika Territory, 24–25 October 1922, 25 November 1922.

The birds are in worn plumage.

According to Lynes[1] *niassae* and *cinerascens* are probably not distinct but should be merged under the latter name. He found the birds apparently breeding during the early part of the rains (Jan.-Feb.) at Iringa.

### Turdus libonyanus centralis Reichenow

*Turdus pelios centralis* Reichenow, Vög. Afr., **3**, 1905, p. 690: Wadelai, Sudan.

1 ♂, 1 ♀, Kabura, Mawokota, Uganda, 26 August 1919.
1 ♀, Chantwara, Bukoba, Tanganyika Territory, 21 December 1922.

The Kabura birds are in fairly fresh plumage.

According to van Someren,[2] the breeding season in Uganda is from April to June and from October to December.

[1] Journ. f. Orn. **82**, 1934, Sonderheft, pp. 79–80.
[2] Ibis, 1916, p. 465.

### Turdus olivaceus uluguru Hartert

*Turdus milanjensis uluguru* Hartert, Bull. Brit. Orn. Cl., **44**, 1923, p. 6: Bagilo, Uluguru Mountains.

1 immature ♂, Bagilo, Uluguru Mountains, Tanganyika Territory, 4 May 1922.

Loveridge collected the type together with this bird, and an adult male on 8 June 1922.

Sclater[1] considers *milanjensis* and *uluguru* races of *T. olivaceus* and restricts the latter to the Uluguru Mountains. I have already reported elsewhere[2] that *uluguru* occurs in the Usambara range as well, but recently I have reëxamined the Usambara specimens and find them all to be *roehli*.

The immature plumage of this form is similar to that of *milanjensis*.

### Turdus olivaceus elgonensis (Sharpe)

*Merula elgonensis* Sharpe, Ibis, 1891, p. 445: "Mt. Elgon"; type from Kikuyu.

1 ♂, Nairobi, Kenya Colony, 13 October 1915.
1 immature ♀, Ngong Forest, Kenya Colony, 31 July 1919.
1 ♂, 1 ♀, Nairobi district, Kenya Colony, 1 September 1920.
"Also Tumutumu." (A.L.)

This race of the olive thrush is a common bird in the highlands of south-central Kenya Colony, from Nairobi to Mt. Elgon. On Mt. Kilimanjaro it is replaced by a very much darker form, *deckeni*, in Ngorongoro by a still darker one—*oldeani*, on Mt. Mbololo by *helleri*, and in the Usambara Mountains by still another race, *roehli*.

The young bird is full grown and in fresh juvenal plumage. This corresponds very nicely with van Someren's statement[3] that the nesting season near Nairobi is in April and May.

### Turdus tephronotus Cabanis

*Turdus tephronotus* Cabanis, Journ. f. Ornith., 1878, p. 205, 218, pl. iii, fig. 2: Ndi, Teita, district, Kenya Colony.

1 ♂, Dodoma, Tanganyika Territory, 30 November 1921.
1 ♀, Mahaka, Dodoma, Tanganyika Territory, 27 March 1922.

[1] Syst. Avium Aethiop., part ii, 1930, p. 441.
[2] Ibis, 1928, p. 94.
[3] Ibis, 1916, p. 464.

The female is in much fresher plumage than the male and is considerably darker orange brown on the sides and flanks than the latter. Both are longer billed than a small series from northern Kenya Colony and southern Ethiopia. The male has a culmen length of 27.5, the female, 23.5 mm.

This thrush inhabits the rather arid scrub country from southern Somaliland to Dodoma and Mahaka in Tanganyika Territory, and to the Endoto Mountains in northern Kenya Colony, and through southern Arussi-Gallaland to extreme southern Shoa.

### Geokichla gurneyi raineyi Mearns

*Geocichla gurneyi raineyi* Mearns, Smiths. Miscel. Coll. **61**, no. 10, 1913, p. 4: Mt. Mbololo, east of Kilimanjaro.

1 immature ♂, 1 immature ♀, Bagilo, Uluguru Mountains, Tanganyika Territory, 5 May 1922.

It seems to me that the birds Neumann named *usambarae*[1] are identical with *raineyi* Mearns. When describing the latter, Mearns definitely stated that it is, " . . . more closely related to *Geocichla gurneyi otomitra* Reichenow, inhabiting Kondeland, than to *G. g. kilimensis* Neumann, the form occurring on Mount Kilimanjaro."

The bird from Bagilo referred to *kilimensis* by me[2] is also *raineyi*.

The type of *raineyi* has a wing length of 110 mm., not 105 mm., as reported by Mearns.

Neumann[3] writes that *kilimensis* has a wing length of 97–98 mm., and has the under tail coverts washed with cinnamon brown. It follows then, that *raineyi*, with pure white under tail coverts, and larger wings, cannot be considered as synonymous with *kilimensis*, as suggested by Sclater.[4]

Lynes[5] has recently obtained specimens of "*usambarae*" from Njombe, far to the south of any previous record. He states definitely that his birds agree with the type of *usambarae* and not with *otomitra*.

Moreau[6] writes of birds from Narok forest, Mt. Meru that they are nearer to *usambarae* than to *kilimensis*. His birds are probably *raineyi*.

[1] Journ. f. Ornith., 1920, p. 82: Mlalo, Usambara Mountains.
[2] Ibis, 1928, p. 94.
[3] Journ. f. Ornith., 1906, pp. 286–287.
[4] Syst. Avium Aethiop., part ii, 1930, p. 444.
[5] Journ. f. Orn., **82**, 1934, Sonderheft, p. 80.
[6] Proc. Zool. Soc. Lond., 1935 (1936), p. 879.

### Neocossyphus rufus rufus (Fischer and Reichenow)

*Pseudocossyphus rufus* Fischer and Reichenow, Journ. f. Ornith., 1884, p. 58: Pangani River.

1 ♀ (= ♂ ?), Uluguru Mountains, Tanganyika Territory, 1 June 1921.

This specimen, sexed by a native skinner as a female, is so large that it is probably a male. If not, the birds of the Uluguru Mountains may prove to be separable from those of the coastal plain on the basis of size. The dimensions of this example are as follows: wing 127, tail 112, culmen 21 mm.

*Stizorhina grandis* Ogilvie-Grant[1] is a synonym. The two genera *Stizorhina* (Muscicapidae) and *Neocossyphus* (Turdidae) are remarkably similar in color and size, and it may well be that more detailed structural investigation will show them to be more closely related than their present systematic positions would indicate.

The range of *Neocossyphus rufus rufus* is more extensive than published records alone suggest. Besides being known from the Pangani River and the Uluguru range, the form has been recorded from near Mombasa, and from Malindi, in the coastal plain of Kenya Colony. However, in the American Museum of Natural History there are two specimens collected by Keith Caldwell at Masabubu, lower Tana River, a new locality for this bird.

### Monticola saxatilis (Linnaeus)

*Turdus saxatilis* Linnaeus, Syst. Nat., 12th ed., **1**, 1766, p. 294: mountains of Switzerland, Australia, and Prussia; Switzerland (Hartert).

1 ♂, Morogoro, Tanganyika Territory, 22 February 1918.
1 ♂, 1 ♀, Morogoro, Tanganyika Territory, 27 November 1918.
"Also Mombasa and Kilosa." (A.L.)

The European rock thrush winters as far south as Morogoro and the Ubena highlands, Tanganyika Territory. The birds commence arriving in late October and leave early in March.

### Oenanthe oenanthe oenanthe (Linnaeus)

*Motacilla oenanthe* Linnaeus, Syst. Nat., 10th ed. 1758, p. 186: Europe; restricted type locality Sweden.

[1] Bull. Brit. Orn. Cl., **27**, Dec. 1910, p. 30, Gazi, Shimba Hills near Mombasa.

1 ♂, Kilosa, Tanganyika Territory, 3 February 1921.
"Also Nairobi, Mombasa, and Tabora." (A.L.)

The European wheatear is a common winter visitor throughout eastern Africa, south to Mikindani, on the Tanganyika-Mozambique border. One doubtful record from the Zambesi valley.

### Oenanthe oenanthe rostrata (Hemprich and Ehrenberg)

*Saxicola rostrata* Hemprich and Ehrenberg, Symb. Phys., **1**, fol. aa, 1833: Upper Egypt, North Arabia, and Syria.

1 ♀, Morogoro, Tanganyika Territory, 24 November 1917.
1 ♂, Dar es Salaam, Tanganyika Territory, 3 February 1919.

A good percentage of the wheatears wintering in eastern Africa belong to this long-billed near-eastern race. I do not know of any previous records from Tanganyika Territory, but it is only recently that students have begun to differentiate the races of palearctic migrants in their winter quarters.

### Oenanthe isabellina (Temminck)

1 ♀, Sagayo, Mwanza, Tanganyika Territory, 28 October 1922.

*Saxicola isabellina* Temminck and Laugier, Pl. Col. livr. 79, 1829, pl. cccclxxii, fig. 1: Nubia.

This specimen appears to be about the southwesternmost record for the species, which was previously known to winter as far south as the Masai steppes on the Kenya-Tanganyika border, and, according to Grote[2], in Zanzibar.

### Oenanthe pileata livingstonii (Tristram)

*Campicola livingstonii* Tristram, Proc. Zool. Soc. Lond., 1867, p. 888: Murchison Falls, Nyasaland.

1 ♂, Morogoro, Tanganyika Territory, 23 March 1917.
1 ♂, Nairobi, Kenya Colony, 1 October 1920.
1 ♂, 1 ♀, Samumba, Singida, Tanganyika Territory, 25 February 1922.
"Also Dar es Salaam, Kilosa, and Tabora." (A.L.)

The female is in a fairly advanced stage of the post-juvenal molt. The feathers forming the black pectoral band are tipped with whitish;

[1] Mitteil. Zool. Mus. Berlin, **17**, 1931, p. 410.

the crown and forehead are still covered with the brown feathers of the first plumage; otherwise the bird resembles fully adult ones.

There is just a bare possibility that the coastal birds of East Africa are typical *pileata*, in which case the Dar es Salaam record would have to be referred to that race.

### Thamnolaea cinnamomeiventris subrufipennis Reichenow

*Thamnolaea subrufipennis* Reichenow, Journ. f. Ornith., 1887, p. 78: near Ussure, Kondoa Irangi district, (now Usurwe, Singida district, Tanganyika Territory).

1 ♂, Uluguru Mountains, Tanganyika Territory, 10 May 1921.
1 ♀, Uluguru Mountains, Tanganyika Territory, 3 June 1921.

"Also Bagilo, Dodoma, and Sagayo." (A.L.)

I have seen no birds from the Usambara Mountains and so cannot pass definitely on the validity of *T. c. usambarae* Neumann, but I doubt if it can be maintained. The present race occurs from Nyasaland through Tanganyika Territory, Kenya Colony, and Uganda to the northeastern Belgian Congo, the southern Sudan, and southwestern Ethiopia.

The present specimens are in fresh plumage.

The breeding season seems to be in June on Mt. Elgon, according to Granvik[1] and also in the Nguru Mountains, according to Schuster.[2]

### Thamnolaea arnotti leucolaema (Fischer and Reichenow)

*Myrmecocichla leucolaema* Fischer and Reichenow, Orn. Centralb., 1880, p. 181: Nguru Mountains, Morogoro district, Tanganyika Territory.

1 ♂, 1 ♀, Kilosa, Tanganyika Territory, 10 January 1921.
1 ♂, 1 ♀, Kilosa, Tanganyika Territory, 25 July, 1921.
1 ♂, Kilosa, Tanganyika Territory, 24 March, 1923.

Thanks to the studies of Ogilvie-Grant, Hartert, and Neunzig, the confusion about this bird and *Myrmecocichla nigra*, that started with Reichenow's lumping of the two, has been smoothed out.

The plumage variations of this bird are quite unusual. The immature female has the whole head and body dark fuscous black. The crown and nape are slightly washed with brownish. The adult female has the top of the head dark fuscous but the chin, throat, cheeks, and

[1] Journ. f. Ornith., 1923, Sonderheft, p. 250.
[2] Ibid., 1926, p. 739.

middle of the breast white; while adult males have the forehead and crown white, the chin, throat, and breast black like the rest of the body. All have white upper wing coverts.

In the Unyamwezi district south through western Tanganyika Territory, a slightly larger race, *collaris*, occurs. Females of the two forms differ in that the auriculars are white in *leucolaema*, and black in *collaris*. The present race inhabits the eastern part of Tanganyika Territory.

Schuster[1] found this bird breeding in September in southeastern Tanganyika Territory.

### Myrmecocichla aethiops cryptoleuca Sharpe

*Myrmecocichla cryptoleuca* Sharpe, Ibis, 1891, p. 445: Kikuyu.

1 ♂, 1 ♀, Nairobi, Kenya Colony, 18 August 1920.

"Also Eldoret." (A.L.)

The Kenya anteater-chat is a common bird in the open steppe country from the western Kenya-Tanganyika border to Mt. Elgon and Mt. Uraguess. It breeds from March to July and from December to January.

### Myrmecocichla nigra (Vieillot)

*Oenanthe nigra* Vieillot, N. Dict. d'Hist. Nat., **21**, 1818, p. 431: west coast of Africa; Malymbe, that is, Malimba, Portuguese Congo, ex Levaillant, pl. clxxxix.

1 ♂, Kabura, Mawokota, Uganda, 20 August 1919.
1 ♂, 1 ♀ (= ♂), Rukaya, Mawokota, Uganda, 3 November 1919.
2 ♂, Chantwara, Bukoba, Tanganyika Territory, 8–11 January 1923.

The sooty-chat is an abundant bird in Uganda and also occurs in Ruanda, Urundi, and western Tanganyika Territory, north to Mt. Elgon in western Kenya Colony, and west to Angola and Cameroon. According to van Someren,[2] the nesting time in Uganda is in May and June and again in October.

The "female" (male) from Rukaya is in molt.

[1] Journ. f. Ornith., 1926, p. 739.
[2] Ibis, 1916, p. 465.

### Saxicola torquata axillaris (Shelley)

*Pratincola axillaris* Shelley, Proc. Zool. Soc. Lond., 1884, p. 556: Mt. Kilimanjaro, 7,000 feet.

1 ♂, Ngong, Nairobi, Kenya Colony, 16 July 1919.
1 ♀, Nairobi district, Kenya Colony, 11 October 1920.
1 ♂, Eldoret, Kenya Colony, 6 November 1920.

"Also Tumutumu." (A.L.)

The Ngong bird is heavily spotted and marked with black on the breast and abdomen. It is in very worn plumage; the others are without any black spots on the breast and abdomen and are in fresh plumage.

### Saxicola torquata promiscua Hartert

*Saxicola torquata promiscua* Hartert, Bull. Brit. Orn. Cl., **42**, 1922, p. 51: Uluguru Mountains, Tanganyika Territory.

2 ♂, Bungu, Usambara Mountains, Tanganyika Territory, September 1921.

The Usambara Mountains appear to be the northern limit of the range of this form. On Kilimanjaro and Meru, not so far away, *axillaris* replaces it. It would be of interest to know what form occurs in the Pare and Bura Hills. The present form differs from *axillaris* in having the black area on the throat of the male more extensive, and the brown of the breast less so.

The breeding season, in the Uluguru Mountains, appears to be in October.[1]

### Saxicola rubetra rubetra (Linnaeus)

*Motacilla rubetra* Linnaeus, Syst. Nat., 10th ed., 1758, p. 186: Europe; restricted type locality, Sweden.

1 ♂, 1 ♀, Kome Island, Mwanza, Tanganyika Territory, 21 November 1922.

These two specimens are in winter plumage.

The European whinchat occurs abundantly in Kenya Colony and Uganda in winter, and south through the western half of Tanganyika Territory to the north end of Lake Nyasa. It does not seem to occur in the eastern portions of that country.

[1] cf. Ibis, 1928, p. 95.

### Cossypha heuglini heuglini Hartlaub

*Cossypha heuglini* Hartlaub, Journ. f. Ornith., 1866, p. 36: "Keren," error, Wau, Bahr el Ghazal (Heuglin, Orn. Nordost. Afr., **1**, p. 375).

1 ♂, Nairobi, Kenya Colony, 16 July 1919.
1 ♂, Kilosa, Tanganyika Territory, 25 December 1920.
1 ♂, 1 ♀, Bungu, Usambara Mountains, Tanganyika Territory, September 1921.
2 ♂, Bagilo, Uluguru Mountains, Tanganyika Territory, 15–26 May 1922.

The birds from the Usambara Mountains are intermediate between *heuglini* and *intermedia*, but somewhat nearer the former. Grote[1] has recorded Usambara birds as *intermedia*, so it appears to be the meeting place of the two races, some specimens being nearer to the one, others to the other form.

The July bird from Nairobi is in fresh plumage; the September specimens are rather worn.

### Cossypha heuglini occidentalis Reichenow

*Cossypha heuglini occidentalis* Reichenow, Journ. f. Ornith., 1909, p. 108: Lufuku, west of Lake Tanganyika.

1 ♂, 1 ♀, Kabale, Ruanda, Uganda, 21 September 1919.
1 ♂, Chantwara, Bukoba, Tanganyika Territory, 7 January 1923.
1 ♂, 1 ♀, Kabale, Bukoba, Tanganyika Territory, 12 January 1923.

This is a more richly colored race than typical *heuglini*. It occurs from southwestern Uganda (southern Ankole) south through the eastern Ituri district and Ruanda to Lake Kivu and the west shore of Lake Tanganyika. It is a valid form, although not listed as such by Sclater.[2]

### Cossypha heuglini intermedia (Cabanis)

*Bessornis intermedia* Cabanis, Journ. f. Ornith., 1868, p. 412: coastal districts of East Africa.

In his manuscript list of the collection, Loveridge records a specimen of this form taken at Mombasa on 23 May 1918. I have not been able to find this bird, but there is no reason for doubting the identification.

[1] Journ. f. Ornith., 1921, p. 133.
[2] Syst. Avium Aethiop., part ii, 1930, p. 470.

### Cossypha heuglini euronota Friedmann

*Cossypha heuglini euronota* Friedmann, Occ. Papers Bost. Soc. Nat. Hist., **5**, 1930, p. 327: Lumbo, Mozambique.

1 ♀, Lumbo, Mozambique, July 17, 1918. (Type.)

This form combines the color characters of *heuglini* with the size of *intermedia*. It is definitely known as yet only from Lumbo, but it is quite probable that it occurs north to Mikindani, where Grote[1] collected this species. At the latter place the breeding season is in February and March. It has recently been recorded from Mt. Silinda, in Gazaland, by Bangs.[2]

Van Someren[3] writes that the color characters of this race are purely sexual, the males being slatey gray on the back, and that *euronota* is a synonym of *intermedia*. However, Bangs records a male from Mt. Silinda as exactly matching the type (female) in color.

### Cossypha semirufa intercedens (Cabanis)

*Bessornis intercedens* Cabanis, Journ. f. Ornith., 1878, pp. 205, 219: Kitui, Ukamba district, Kenya Colony.

1 ♀, Nairobi, Kenya Colony, 20 October 1915.
1 ♂, Ngong, near Nairobi, Kenya Colony, 10 July 1919.

The forms of *Cossypha semirufa* are very closely allied to those of *C. heuglini*, and it may well be that they are all one species.

The present form inhabits the high districts of south-central Kenya Colony, from the Ukamba and Kikuyu districts to Mt. Kenya and the Aberdare Mountains. In eastern Ethiopia (Harar and eastern Gallaland) a shorter winged form, *donaldsoni*, replaces it, while in the rest of Ethiopia two other smaller forms (one northern, the other southern) with olive-green backs are found.

This species also occurs on Mt. Kilimanjaro (1 specimen seen), but whether the Kilimanjaro form is *intercedens* or *donaldsoni* or distinct from both is not very clear. For the present I refer it to *intercedens* but more material is needed.

The present specimens are in fresh plumage.

[1] Journ. f. Ornith., 1913, p. 141.
[2] Proc. N. Eng. Zool. Club, **12**, 1931, p. 67.
[3] Nov. Zool., **37**, 1932, p. 378.

### Cossypha natalensis natalensis Smith

*Cossypha natalensis* A. Smith, Ill. Zool. S. Afr., Aves, 1840, pl. lx: near Port Natal, that is, Durban.

1 ♂, Uluguru Mountains, Tanganyika Territory, 30 May 1921.
1 ♀, Bungu, Usambara Mountains, Tanganyika Territory, September 1921.
1 ♂, Mahaka, Tanganyika Territory, 24 March 1922.
1 ♀, Bagilo, Uluguru Mountains, Tanganyika Territory, 17 May 1922.
1 ♀, Tindiga, near Kilosa, Tanganyika Territory, 25 August 1922.

*C. natalensis intensa* Mearns is a synonym, but, as far as may be judged from a single specimen, *C. n. garguensis* Mearns appears to be a valid race—paler and smaller. Van Someren[1] writes as follows: "Though I have examined a big series, I cannot recognize any constant differences, warranting the separation into geographical forms. I have no Uraguess birds but birds from this locality may very likely be different, because of the peculiar nature of the country."

This robinchat is a common bird throughout the regions represented by the present collection.

In Uganda it breeds in April and May.

### Cossypha niveicapilla melanonota (Cabanis)

*Bessonornis melanonota* Cabanis, Journ. f. Ornith., 1875, p. 235: Tschentschoscho, Portuguese Congo.

1 unsexed, Uganda, 1919.
1 ♂, 1 ♀, Chantwara, Bukoba, Tanganyika Territory, 26 December 1922.

The snowy-headed robinchat is a bird of the forests and occurs from Cameroon to Loango, and east to Uganda, and extreme western Kenya Colony (Kavirondo to Elgon). It appears to be uncommon on Mt. Elgon, as Granvik did not meet with it during his sojourn there.

According to van Someren[2] the nesting season in Uganda is in May and November.

The unsexed bird is blacker on the upper back than the female.

These birds agree with two from Gaboon.

[1] Nov. Zool., **29**, 1922, p. 239.
[2] Ibis, 1916, p. 472.

### Cossypha caffra iolaema Reichenow

*Cossypha caffra iolaema* Reichenow, Orn. Monatsb., **8**, 1900, p. 5: Mt. Kilimanjaro, East Africa.

1 immature ♂, 1 adult ♀, Nairobi, Kenya Colony, 25 September 1920.

1 adult ♂, Eldoret, Kenya Colony, 8 November 1920.

"Also Tumutumu and the Uluguru Mountains." (A.L.)

*C. c. mawensis* Neumann is a synonym.

This robinchat occurs in the highlands from Nyasaland through Tanganyika Territory to Lake Kivu, Ruanda, Urundi, Ankole, and to Kenya Colony (north to Mt. Elgon and Mt. Kenya district). In the east it does not occur north of Kilimanjaro.

Schuster[1] found this bird in the Usambara, Nguru, Uluguru, north and south Rubeho, and Uzungwe Mountains at altitudes of from 1,000–1,200 meters.

### Bessonornis albigularis albigularis (Reichenow)

*Callene albigularis* Reichenow, Orn. Monatsb., **3**, 1895, pp. 87, 96: Uluguru, that is, Uluguru Mtns., Morogoro district, Tanganyika Territory.

1 ♂, 1 ♀, Uluguru Mountains, Tanganyika Territory, 20 May 1921.

This robinchat is a very rare bird in collections. As far as I know these two, and two females collected by Loveridge at Nyingwa, Uluguru Mountains[2] are the only specimens known other than the types collected by Stuhlmann some thirty years before.

The figure given by Reichenow[3] does not fit these specimens any too well. It is paler than the birds, especially above, and has the auriculars practically surrounded by whitish, while in the specimens examined there is no posterior whitish border to the auriculars.

The female has some old upper primary coverts with rufous terminal shaft spots—apparently juvenal feathers retained into the first adult feathering. The measurements of the present two birds are as follows:

male—wing 74.0, tail 65.0, culmen 19.0, tarsus 32.0 mm.
female—wing 73.5, tail 62.0, culmen 18.0, tarsus 28.0 mm.

[1] Journ. f. Ornith., 1926, pp. 740–741.
[2] See Ibis, 1928, p. 94.
[3] Vög. Afr. Atlas, 1905, pl. xxviii, fig. 2.

Bangs and Loveridge[1] have recently described a race *porotoensis* from the Poroto Mountains and Mt. Rungwe, in southwestern Tanganyika Territory. It is a distinct form and differs from the nominate one in having a smaller and shorter bill, and paler, more yellowish flanks and under tail-coverts. Unfortunately, Sclater, after comparing a paratype with the type of *macclounii* (Shelley) from the Nyika Plateau, finds that *porotensis* must be regarded as a synonym of *macclounii* which he had referred to Callene in the Systema. The name, therefore, is *Bessornis albigularis macclounii* (Shelley).

### Sheppardia cyornithopsis bangsi Friedmann

*Sheppardia cyornithopsis bangsi* Friedmann, Occ. Papers Bost. Soc. Nat. Hist., **5**, 1930, p. 323: Uluguru Mountains.

1 adult ♂, 1 adult ♀, 1 female immature, Uluguru Mountains, Tanganyika Territory, 23 May 1921.

The adult male is the type of *bangsi*.

This race, confined, as far as known, to the Uluguru Mountains is somewhat intermediate between *sharpei* of Nyasaland and *aequatorialis* of southwestern Kenya Colony; agrees with the former in having wide, white superciliary stripes and the whole of the abdomen (except the sides and flanks) white; and agrees with *aequatorialis* in the ochraceous wash of the orange tawny on the throat and breast; differs from both in being slightly more greenish olive, less brownish olive above; tail longer than in *sharpei* (51 mm. as against 45 mm., in the latter).

Measurements: male (type) wing 66, tail 51, culmen 14; female wing 66, tail 51, culmen 13 mm.

The immature female is similar to the adult but has tawny orange terminal shaft stripes on the feathers on the forehead and crown.

### Alethe poliocephalus akeleyae Dearborn

*Alethe akeleyae* Dearborn, Field Mus., Publ. Orn., **1**, 1909, p. 170: Mt. Kenya.

1 ♂, Karura Forest, Kenya Colony, 9 October 1920.

*Alethe kikuyuensis* Jackson is a synonym.

This race of the brown-chested Alethe is larger and more olivaceous,

[1] Proc. N. Eng. Zool. Cl., **12**, 1931, p. 94.

less reddish above than *carruthersi* of Uganda and adjacent parts of western Kenya Colony and of the eastern Belgian Congo.

The single specimen obtained is in fairly fresh plumage. Its dimensions are as follows: wing 96.0, tail 61.5, culmen 19.5, tarsus 24.5 mm.

### Alethe fülleborni usambarae Reichenow

*Alethe fülleborni usambarae* Reichenow Orn. Monatsb., **13**, 1905, p. 182: Mlalo, near Wilhelmstal (*i.e.* Lushoto), Usambara Mountains.

1 ♀, Bagilo, Uluguru Mountains, Tanganyika Territory, May 1922.

This race of the white-chested Alethe appears to be confined to the Usambara and the Uluguru Mountains. The nominate form occurs in the Rungwe country southwest of Uhehe, northeast of Lake Nyasa. The present race is more yellowish brown, less rufous brown, above than the typical subspecies.

Inasmuch as very few specimens of this form exist in collections, I append the measurements of this specimen—wing 100.0, tail 77.0, culmen 26.0, tarsus 33.0 mm. In his original description of *usambarae* Reichenow records a wing length of 103 mm.

Grote[1] records five specimens (including the type) all collected by Roehl in the western slopes of the Usambara Mountains. As far as I know, only six specimens are known, the original five and the present one.

### Cichladusa arquata Peters

*Cichladusa arquata* Peters, Monatsb., Akad. Berlin for 1863, p. 134: Sena, on the Zambesi.

1 ♂, 1 ♀, Lumbo, Mozambique, 10 July 1918.
"Also Dar es Salaam, Kilosa, and Mombasa." (A.L.)

This bird ranges from the Zambesi valley and Nyasaland north through Mozambique and Tanganyika Territory to the country west of Lake Tanganyika, and to Ankole, Uganda, and to Lamu on the coast of Kenya Colony.

A female from Kongolo, Belgian Congo, is slightly smaller than the present female and has the reddish inner margins of the remiges somewhat darker. It has a wing length of 83.5 as against 90.0 mm., in the Lumbo female; a culmen length of 19.5 as against 21.0 mm., in the

[1] Journ. f. Ornith., 1921, pp. 137–138.

latter. The Lumbo male has a wing length of 92.0, culmen 21.0 mm. More material may reveal a smaller form in Central Africa.

The present two specimens are in fine fresh plumage.

### Cichladusa guttata guttata (Heuglin)

*Crateropus guttatus* Heuglin, Journ. f. Ornith., 1862, p. 300: Aniop, Bahr el Jebel; Upper White Nile.

1 ♂, 1 ♀, Morogoro, Tanganyika Territory, 6 July 1917.
"Also Dodoma." (A.L.)

These two specimens are somewhat intermediate between true *guttata* and *rufipennis*, but are nearer the former.

Loveridge found this species breeding at Morogoro in February and April. "The mud nest is built upon a branch, or, more rarely, in a fork; it is very deep. The eggs are of a uniform blue colour . . . ".[1]

### Erythropygia leucophrys zambesiana Sharpe

*Erythropygia zambesiana* Sharpe, Proc. Zool. Soc. Lond., 1882, p. 588, pl. xlv, fig. 2: Tete, Lower Zambesi.

1 ♂, 1 ♀, Lumbo, Mozambique, 16 July 1918.

*Erythropygia ruficauda iubilaea* Grote is a synonym.

This form of this scrub-robin occurs from the Zambesi valley, the southeastern part of Northern Rhodesia and Nyasaland, and, along the coast at least to the Rovuma valley. In the Belgian Congo it is replaced by a darker form, *ruficauda*, and in Uganda by still another race, *vansomereni*, and in northern Tanganyika Territory by *soror*.

The present two specimens are in very fresh plumage, and are somewhat darker and redder above than the colored drawing in the original description (*loc. cit.*).

According to Alexander[2] the breeding season at Zumbo, on the Zambesi, is in December.

Loveridge also collected this species at Dar es Salaam, Kilosa, and Kinyambwa, Tanganyika Territory. I have not seen these specimens, but judging from localities, they are probably *E. l. soror*.

Bowen[3] has recently reviewed the races of this species, with results that agree with the present allocation of Loveridge's specimens.

[1] Proc. Zool. Soc. Lond., 1922, p. 846.
[2] Ibis, 1900, p. 83.
[3] Proc. Biol. Soc. Wash., **47**, 1934, pp. 157–158.

### Erythropygia leucophrys vansomereni Sclater

*Erythropygia leucophrys vansomereni* Sclater, Bull. Brit. Orn. Cl., **49**, 1929, p. 62: Mokia, Ruwenzori, Mountains.

1 ♀, Kabare, Bukoba, Tanganyika Territory, 14 January 1923.

This specimen, which is in very worn plumage, I identify as *vansomereni* more by locality than by anything else. I have only one *vansomereni* with which to compare it—a freshly feathered male from Ruwenzori. The latter bird is darker, more richly rufous above, and is smaller (wing 65.5 as against 69.0 mm., in the present female).

### Erythropygia hartlaubi Reichenow

*Erythropygia hartlaubi* Reichenow, Journ. f. Ornith., 1891, p. 62: Mutjora, Semliki valley.

1 ♂, Ankole, Uganda, 5 September 1919.
1 ♀, Ndeza, Ankole, Uganda, 7 September 1919.

This scrub robin lives in the elephant grass areas in Uganda. Although Sclater[1] states its range to be from Cameroon and northern Angola east to western Uganda, it really occurs east to Nairobi in south-central Kenya Colony.

*E. h. kenia* van Someren is probably a synonym, as an example from Mt. Kenya does not differ from these Uganda birds.

### Erythropygia barbata rovumae Grote

*Erythropygia quadrivirgata rovumae* Grote, Orn. Monatsb., **29**, 1921, p. 109: Mbarangandu River, Upper Rovuma.

1 ♂, Lumbo, Mozambique, 18 July 1918.

This race of the bearded scrubrobin occurs from Inhambane and the Zambesi valley north to extreme southern Tanganyika Territory and southern Nyasaland. In central Tanganyika Territory it merges with a darker browner backed form *quadrivirgata* which extends from Morogoro and Kilosa to the coast and northwards to the mouth of the Tana River, inland to the Teita and south Ukamba districts in Kenya Colony. In southern Somaliland a small paler brownish-backed race, *erlangeri,* occurs. The nominate form barely ranges to East Africa,

[1] Syst. Avium Aethiop., part ii, 1930, p. 484.

its eastern limits being the western shores of Lake Nyasa and the southern end of Lake Tanganyika. It may be told from the eastern races by its under tail coverts which are isabelline, not white.

In his original description of *rovumae* Grote writes that two specimens from the Usambara region are *quadrivirgata*, but one from Morogoro is intermediate between that form and *rovumae*. He suggests that the two races merge in the Morogoro region. However, the specimen taken by Loveridge is apparently a typical example of *quadrivirgata*.

The measurements of the present specimen are as follows: wing 84.0, tail 76.0, culmen 21.0, tarsus 26.5 mm.

### Erythropygia barbata quadrivirgata (Reichenow)

*Thamnobia quadrivirgata* Reichenow, Orn. Centralb., 1879, p. 114: Kipini, lower Tana River.

1 ♀, Morogoro, Tanganyika Territory, 23 July 1917.
1 ♂, Kilosa, Tanganyika Territory, 17 February 1921.

The characters and range of this form have already been dealt with, and need not be repeated here.

### Pogonocichla margaritata orientalis (Fischer and Reichenow)

*Tarsiger orientalis* Fischer and Reichenow, Journ. f. Ornith., 1884, p. 57: Pangani, Tanganyika Territory.

1 adult ♂, 1 adult ♀, Uluguru Mountains, Tanganyika Territory, 13 May 1921.
1 juvenal ♂, 1 juvenal ♀, Bagilo, Uluguru Mountains, Tanganyika Territory, 8 June 1922.

"Also Bungu, Morogoro, and Kilosa." (A.L.)

This race is best characterized by the juvenal plumage which is more uniform green above, not as spotted as in *guttifer*, which form can hardly be told from the present one in adult birds. The young birds have the breast feathers margined with olive green, not with black as in *guttifer* and *keniensis*.

Of this form *P. c. helleri* Mearns appears to be a synonym, but inasmuch as I have seen no young birds of the latter, it is difficult to be

certain. There is no question, however, that *montanus* is a synonym of *orientalis*. Grote[1] has examined the type of *montanus* and decided it was not distinct from *orientalis*.

This race occurs in the Uluguru and Usambara Mountains, north to Mount Mbololo (?) and to the western part of the Tanganyika-Kenya border.

Grote writes that the young of *orientalis* resemble those of *johnstoni* but are more greenish above and more spotted with yellow below. Belcher[2] writes of *johnstoni* in Nyasaland, that, " . . . one nest had a pair of young, which were strongly marked with yellow on the back . . . " The present two young birds are absolutely without any spots on the upper parts.

Since the above was written, Moreau[3] writes that the young of Usambara birds are spotted, not plain. Certainly this is not true of the Uluguru birds listed above.

Peters and Loveridge[4] have recorded juvenal *helleri* from Mt. Mbololo as being spotted. This may mean that *helleri* is distinct from *orientalis*, which would suggest a bewildering array of races in a relatively small area. Further study and more material must be gathered before any final answer may be expected.

### Pogonocichla margaritata keniensis Mearns

*Pogonocichla cucullata keniensis* Mearns, Smiths. Misc. Coll., **56**, no. 20, 1911, p. 9: Mt. Kenya, 10,700 feet.

1 ♀, Ngong, near Nairobi, Kenya Colony, 25 July 1919.
1 ♂, Nairobi district, Kenya Colony, 24 August 1920.

"Also Tumutumu." (A.L.)

This race is similar to *guttifer* of Mt. Kilimanjaro but paler, more golden green, less brownish green on the back. It occurs in the highlands of Kenya Colony from Mt. Uraguess and Mt. Kenya to Molo, Elgeyu, Escarpment, and Nairobi. It does not occur on Mt. Elgon, where it is replaced by *P. m. elgonensis*.

[1] Journ. f. Ornith., 1921, p. 138.
[2] Ibis, 1925, p. 813.
[3] Proc. Zool. Soc. Lond., 1935 (1936), pp. 880–881.
[4] Bull. Mus. Comp. Zool., **79** 1936, p. 179.

### Pogonocichla margaritata ruwenzorii (Ogilvie-Grant)

*Tarsiger ruwenzorii* Ogilvie-Grant, Bull. Brit. Orn. Cl., **19**, 1906, p. 33: e. Ruwenzori; type from Mubuku valley, 7,000 feet.

1 ♂, Singo, Ruanda, Uganda, 25 September 1919.
Soft parts: iris brown, bill black; feet gray.

The Ruwenzori race is smaller and darker on the back than *keniensis* or *guttifer*, but nearest the latter. Gyldenstolpe[1] considers it the same as *intensa* Sharpe, but I prefer to follow Sclater's arrangement[2] in all cases where I have not sufficient material to decide for myself.

The specimen is in rather worn plumage.

The breeding season is in January.

This bird occurs from 6,500–12,000 feet on Ruwenzori, being found in the forest and the lower fringe of the bamboo zone.

### Irania gutturalis (Guerin)

*Cossypha gutturalis* Guerin, Rev. Zool., 1843, p. 162: Abyssinia.

1 ♂, 1 ♀, Dodoma, Tanganyika Territory, 22 December 1918.

Sclater[3] states that this East Asiatic bird winters south along the, " . . . Persian Gulf to s. w. Arabia, the shores of the Red Sea from Eritrea to Somaliland, and southern Abyssinia; south to the Taveta district of Kenya Colony." Grote[4] similarly gives no record south of Taveta. It appears, then, that the present two birds constitute the first records for the species in Tanganyika Territory, and extend the southern limits of the winter range by about 200 miles.

The male is in fine fresh plumage; the female is similar but has worn rectrices.

### Luscinia luscinia (Linnaeus)

*Motacilla luscinia* Linnaeus, Syst. Nat. 10th ed., 1758, p. 184: Europe; restricted type locality Sweden.

1 ♀, Dodoma, Tanganyika Territory, 23 December 1918.

This nightingale winters in East Africa as far south as Nyasaland and the Kafue River in Northern Rhodesia.

The specimen collected is in freshly molted plumage.

[1] Kungl. Sv. Vet. Akad. Handlngr., 1924, p. 155.
[2] Syst. Avium Aethiop., part ii, 1930, p. 487.
[3] Syst. Avium Aethiop., part ii, 1930, p. 491.
[4] Mitt. Zool. Mus. Berlin, **16**, 1930, p. 49.

## Family SYLVIIDAE. Warblers

### Sylvia communis communis Latham

*Sylvia communis* Latham, Gen. Syn. Suppl., **1**, 1787, p. 287: England.

1 ♀, Dodoma, Tanganyika Territory, 21 December 1918.

Central Tanganyika Territory is about as far south as the whitethroat usually occurs, although it has been taken on rare occasions in Southern Rhodesia and Damaraland. In Kenya Colony, and farther north, it is a very common winter visitor.

The present specimen is partly in fresh plumage, rather earlier than usual for the molt to begin.

### Sylvia borin borin (Boddaert)

*Motacilla borin* Boddaert, Tabl. Pl. Enl., 1783, p. 35: ex Daubenton, Pl. Enl. 579, fig. 2: Europe.

1 ♀, Mwanza, Tanganyika Territory, 3 December 1922.

The garden warbler winters throughout the regions covered by the present paper. It is one of the first European birds to arrive in the autumn and one of the last to leave in the spring.

The single specimen obtained is in worn plumage. It is large, having a wing length of 77 mm.

### Hippolais icterina (Vieillot)

*Sylvia icterina* Vieillot, N. Dict. d'Hist., Nat. **11**, 1817, p. 194: France.

1 ♀, Samumba, Singida, Tanganyika Territory, 25 February 1922.
1 ♀, Mwanza, Tanganyika Territory, 6 December 1922.

The bird taken at Samumba is in molt.

As far as I have been able to discover, the icterine warbler has not been recorded previously from Tanganyika Territory. However, specimens have been taken in Kenya Colony on the north, and at Zumbo on the Zambesi, to the south.

Grote[1] writes that this palearctic bird has been recorded very seldom from East Africa.

[1] Mitt. Zool. Mus. Berlin, **16**, 1930, p. 29.

### Acrocephalus arundinaceus arundinaceus (Linnaeus)

*Turdus arundinaceus* Linnaeus, Syst. Nat. 10th ed., 1758, p. 170: N. Europe; Danzig, ex Klein.

1 ♀, Kilosa, Tanganyika Territory, 3 January 1921.

Sclater[1] writes that typical *arundinaceus* winters south to Darfur, Sudan, Eritrea, and southwestern Arabia, " . . . occasionally to Natal, but birds from South Africa are generally referable to *A. a. zarudnyi.*" For the winter range of *zarudnyi,* he writes, "... Somaliland, Tanganyika (near Dar es Salaam), and perhaps to Nyasaland; also to Natal, Transvaal, and Bechuanaland." It would appear then, that the present specimen should be of the Turkestan race, but it is certainly not different from typical *arundinaceus.* The Turkestan form *zarudnyi* is said to be less rufescent, more olivaceous, above, and paler on the flanks and under tail coverts than European birds. I have compared the present specimen with three of the latter and find them identical. Unfortunately, I have no Asiatic examples for comparison.

Grote[2] has omitted all mention of *zarudnyi* in his compilation of African records of palearctic birds, and calls them all *A. a. arundinaceus.* He writes that the species is a common winter visitor in South Africa, but appears to be scarce in coastal Kenya Colony and Tanganyika Territory. Van Someren[3] finds his Ugandan and Kenyan birds are all typical *arundinaceus.*

Lynes[4] likewise finds that his birds from Njombe, southwestern Tanganyika Territory are *arundinaceus* and not *zarudnyi.*

Recently van Someren[5] has obtained *zarudnyi* on the Juba River.

### Acrocephalus griseldis (Hartlaub)

*Calamoherpe griseldis* Hartlaub, Abh. Nat. Ver. Bremen, **12**, 1891, p. 7: Nguru, Kilosa district, Tanganyika Territory.

1 ♀, Kilosa, Tanganyika Territory, 12 February 1921.

The Basra reed warbler has had a rather remarkable history. It was first discovered at Nguru in Tanganyika Territory, and, quite nat-

[1] Syst. Avium Aethiop., part ii, 1930, p. 501.
[2] Mitt. Zool. Mus. Berlin, **16**, 1930, p. 27.
[3] Nov. Zool. **29**, 1922, p. 231.
[4] Journ. f. Orn., **82**, 1934, Sonderheft, p. 84.
[5] Nov. Zool., **37**, 1932, p. 374.

urally, was thought to be an African form of the genus Acrocephalus. The type remained unique until Loveridge obtained two at Kilosa, and Noel van Someren obtained another at Nyambe crater on Mt. Kenya. Then in 1920, Ticehurst discovered an apparently new species in Iraq and named it *A. babylonicus* and it was not until 1922 that the matter was cleared up by the discovery that *babylonicus* and *griseldis* were identical, and that the bird breeds in Iraq and winters in East Africa. It appears to be scarce (or, at least, has been little collected) in both its summer and its winter quarters.

Van Someren[1] obtained two specimens in December on the Northern Guaso Nyiro River.

Aside from the few Kenyan and Tanganyikan localities, this species has also been recorded in the Danakil coastlands of Eritrea as late as April 27 by Madarasz.

The present specimen is in somewhat worn plumage. Because of its scarcity in collections, its measurements are here appended—wing 80.5, tail 61.5, culmen 22.0 mm.

### Acrocephalus baeticatus suahelicus Grote

*Acrocephalus baeticatus suahelicus* Grote, Orn. Monatsb. **34**, 1926, p. 145: Zanzibar.

2 (1 = ♂), Dar es Salaam, Tanganyika Territory, 25 June 1918.

As far as I know, these two constitute the first records for the African mainland for this race, hitherto known only from the islands of Zanzibar and Pemba. The present birds have wing lengths of 56 and 58 mm. respectively and therein agree with the figures given by Grote for this race (57–60 mm. as against 63–64 mm. for South African *baeticatus*).

I do not know if Grote's Mikindani birds[2] are *suahelicus* or not. His were the first records for the species in Tanganyika Territory. Aside from the Zanzibar and Pemba birds, the present two are the only ones taken subsequently in that political area.

Grote found the breeding season at Mikindani to be in February.

The present specimens are in rather worn plumage.

[1] Nov. Zool., **37**, 1932, p. 374.
[2] Journ. f. Ornith., 1913, p. 139.

### Acrocephalus schoenobaenus (Linnaeus)

*Motacilla schoenobaenus* Linnaeus, Syst. Nat., 10th ed., 1758, p. 184: Europe; restricted type locality, S. Sweden.

2 ♀, Kilosa, Tanganyika Territory, 22 April 1921.

The European sedge warbler is a regular and common winter visitor and migrant throughout the region represented by the present collection. It occurs south as far as Natal and the Transvaal.

### Phllyoscopus trochilus trochilus (Linnaeus)

*Motacilla trochilus* Linnaeus, Syst. Nat., 10th ed., 1758, p. 188: England (see Hartert, Vög. pal. Fauna, 1907, p. 507).

1 unsexed, Eldoret, Kenya Colony, 9 November 1920.
1 ♂, Sagayo, Mwanza, Tanganyika Territory, 6 November 1922.

The willow warbler is a regular winter visitor and migrant throughout the regions under consideration in this report.

The northern, Eurasian race *eversmanni* also winters in Eastern Africa, especially in Kenya Colony and Uganda. I am not aware of any definite Tanganyikan records of *eversmanni*.

### Schoenicola brevirostris (Sundevall)

*Bradypterus brevirostris* Sundevall, Ö. fvers. K. Sv. Vet. Akad. Forhandl., **7**, no. 4, May 1850, p. 103: "Caffraria inferiore"; type from Umlazi River, Natal.

1 unsexed, Ngong, Kenya Colony, 30 July 1919.
1 ♀, Kibosi, Ruanda, Uganda, 4 October 1919.

"Also Bagilo, Uluguru Mountains." (A.L.)

The fan-tailed warbler occurs in the interior of East Africa from southwestern Ethiopia south to Pondoland, but is rather local in its distribution, and is nowhere abundant. Schuster[1] observed it frequently in the Uluguru Mountains; Sjöstedt obtained it on Kilimanjaro; others have found it in numerous other localities.

The breeding season is not known in Tanganyika Territory, but a nest has been found in September in Uganda.

The present specimens are in fairly fresh plumage.

[1] Journ. f. Ornith., 1926, p. 737.

### Apalis melanocephala nigrodorsalis Granvik

*Apalis melancæphala nigrodorsalis* Granvik, Journ. f. Ornith., 1923, Sonderhelft, p. 244: Kiambu, near Nairobi, Kenya Colony.

1 ♂, Karura, Nairobi, Kenya Colony, 2 October 1920.

This appears to be the third specimen collected (at least as far as I have been able to tell from published records) of this rare forest warbler, the other two being Granvik's type shot at Kiambu, and one taken at Nyeri by the Smithsonian-Roosevelt Expedition. This race is replaced in the coastal belt by the typical form which has been taken on the Pangani River and in southern Somaliland.

Since this paragraph was written van Someren[1] has gathered a series of 30 specimens which bear out the characters of the race, at least as far as size is concerned. He finds the blacker coloring to be variable.

An intermediate race *A. m. moschi* van Someren, described from Moshi, Marangu, I have not seen.

The present specimen is in good, fresh plumage. The wing measures 51; the tail 71; culmen 15; tarsus 18 mm.

This warbler is strictly a denizen of the forests and stays high up in the trees—a fact which may account, in part at least, for its scarcity in collections.

### Apalis griseiceps uluguru Neumann

*Apalis griseiceps uluguru* Neumann, Orn. Monatsb., **22**, 1914, p. 10: Uluguru Mountains, Tanganyika Territory.

1 ♀, Uluguru Mountains, Tanganyika Territory, 11 May 1921.

I have seen some 11 specimens of this race (4 males and 7 females) and find the character of which it was based to hold true very consistently. The yellow of the abdomen comes up to the black thoracic band in *uluguru* while in *griseiceps* there is a white area between the yellow and the black.

Sclater[2] considers *griseiceps* and *uluguru* as races of *thoracica*. While there can be little doubt as to the close affinity of the two groups, still the former differs so markedly and in so many details from the latter that it seems better to keep them as specific units. Thus, the crown is grayish or greenish gray in *thoracica*, brownish in *griseiceps;*

[1] Nov. Zool., **37**, 1932, p. 36S.
[2] Syst. Avium Aethiop., part ii, 1930, p. 520.

there is a well developed black line from the bill through the eye and extending caudally along the lower margin of the cheeks in *thoracica* and there is no such line in *griseiceps;* the underparts are very pale yellow or even yellowish-white in *thoracica,* rich yellow in *griseiceps.*

I have had the opportunity of examining the type of *Apalis thescela* Oberholser and of comparing it with *griseiceps* and find that the differences pointed out by Oberholser[1] are very striking, but I doubt if there could be two such closely allied forms on Mt. Kilimanjaro, and I strongly suspect that *thescela* is either an aberrant, or possibly, an immature *griseiceps,* or is accidental there. It has the underparts as light in color as *thoracica.*

Neumann[2] records a specimen collected by Roehl at Mlalo, Usambara Mountains, that matches the description of *thescela,* and writes that if the latter is not the young of *griseiceps,* then it must be considered a valid race ranging from the Usambara Mountains to the lower slopes (up to 6,000 feet) of Kilimanjaro, and that *griseiceps* is restricted to the higher stretches (9,000–10,000 feet) of the latter mountain. However, it must be noted that Sjöstedt[3] obtained *griseiceps* as low as 2,000 meters (6,600 feet) so there appears to be little in the way of an altitudinal distinction between the ranges of the two.

In his report on Roehl's full collection from the western slopes of the Usambara Mountains, Grote[4] lists *thescela* and not *griseiceps.* It would appear, then, that *thescela* is probably a valid race, chiefly found in the Usambara Mountains (and probably it will yet turn up in the Paré Range) but reaching the lower slopes of Kilimanjaro where it meets *griseiceps.*

### Apalis flavida neglecta (Alexander)

*Chlorodyta neglecta* Alexander, Bull. Brit. Orn. Cl., **10**, 1900, p. 17: s. e. Africa, type in Brit. Mus. from Zambesi River.

Loveridge collected seven specimens of this race at Lumbo, Mozambique in 1918. Five of the series were deposited in the Nairobi Museum and have not been examined in connection with the present paper. Van Someren[5] records two of these specimens as being in his collection.

[1] Proc. U. S. Nat. Museum, **28**, 1905, p. 904.
[2] Orn. Monatsb., 1912, p. 10.
[3] Kilimandjaro-Meru Exp., Vozel, 1908, p. 154.
[4] Journ. f. Ornith, 1921, p. 135.
[5] Nov. Zool. **29**, 1922, p. 222.

### Apalis flavida golzi (Fischer and Reichenow)

*Euprinodes golzi* Fischer and Reichenow, Journ. f. Ornith., 1884, p. 182: Great Arusha, Tanganyika Territory.

1 ♂, 1 ♀, Dar es Salaam, Tanganyika Territory, 13 June 1918.

"Also Mombasa, Morogoro, and Dodoma." (A.L.)

This race of the yellow-breasted bush warbler occurs along the coastal belt of eastern Africa from Mombasa to the Pangani River, and inland through the Ugogo and Kilimanjaro area, and, farther south, to Dodoma, and to Mpwapwa, west of which it gradually merges with *aequatorialis*. The figure given by Reichenow in his "Vögel Deutsch-Ost-Afrikas," 1894, p. 224, labelled *flavocincta* is either *golzi* or *aequatorialis*. I do not know if *flavocincta* occurs in Tanganyika Territory.

The validity of *aequatorialis* is open to question. It is said to differ from *golzi* in having the yellow breast band darker, but the present female from Dar es Salaam has this area as dark as a female from the Sotik district of Kenya Colony, and darker than in another from Kilimanjaro.

The female differs from the male in lacking the black spot on the breast, and in being yellower, less olive-green, above.

Madarasz[1] recorded a nest of this warbler taken in the Latema (Lettema) Hills, near Kilimanjaro, by Katona on April 15.

### Eminia lepida lepida Hartlaub

*Eminia lepida* Hartlaub, Proc. Zool. Soc. Lond., for 1880 (1881), p. 625, pl. lx, fig 1: Majungo, north end of Lake Albert.

1 ♀, Buchosa, Mwanza, Tanganyika Territory, 28 November 1922.

1 ♀, Kabare, Bukoba, Tanganyika Territory, 29 January 1923.

Sclater[2] recognizes no races of Emin's swamp warbler, but it seems that there is an eastern form, *hypochlorus* Mearns, east of the Rift Valley, which differs from the typical form in being darker, more grayish on the breast, flanks, sides, and on the forehead and cheeks.

The range extends further south than Sclater indicates. The bird ranges completely around Lake Victoria, as shown by the present

[1] Zeitschrift für Oologie und Ornithologie, **15**, no. 12, 1906, p. 178.

[2] Syst. Avium Aethiop. part ii, 1930, p. 529.

bird from Mwanza, and one taken many years ago at Kageji by Fischer.

The present birds are in fairly fresh plumage.

The breeding season in Uganda is in May. I know of no nesting dates for Tanganyika Territory.

### Sylvietta whytii whytii Shelley

*Sylviella whytii* Shelley, Ibis, 1894, p. 13: Zomba, Nyasaland.

1 ♀, immature, Morogoro, Tanganyika Territory, 30 June 1917.
1 ♂, Dar es Salaam, Tanganyika Territory, 4 July 1918.

"Also Kilosa and Lumbo." (A.L.)

I have seen no material of *whytii* other than the present two specimens, and therefore cannot say if *pallidior* Grote (described from Mikindani) and *fischeri* Reichenow (from Malindi) are distinct or not. Zedlitz[1] considers them identical with *whytii*, but van Someren[2] recognizes *fischeri* as a valid form inhabiting a narrow strip along the southern part of the coast of Kenya Colony. Without material, I can do nothing but follow Sclater.[3]

The immature bird is somewhat darker tawny below, especially on the throat, flanks, and under tail coverts, than the adult.

This race occurs from Gazaland, Mozambique, and Nyasaland northwards along the coastal areas of Tanganyika Territory (inland to Kilosa and Morogoro) to the Kenya border. In the interior of the northern and north central parts of Tanganyika Territory it is replaced by a darker form, *jacksoni* Sharpe.

### Sylvietta whytii jacksoni Sharpe

*Sylviella jacksoni* Sharpe, Bull. Brit. Orn. Cl., **7**, 1897, p. 7: Kamasia, Kenya Colony.

A male from Sagayo and a female from Mbonoa, collected by Loveridge, now in the American Museum of Natural History, have been referred to this race by Chapin.

*Sylvietta zedlitzi* Reichenow, described from Yaida, southeast of Lake Eyasi, Tanganyika Territory, is a synonym, the type being a young bird.

[1] Journ. f. Ornith., 1916, p. 95.
[2] Nov. Zool., **29**, 1922, p. 226.
[3] Syst. Avium Aethiop., part ii, 1930, p. 532.

### Eremomela griseoflava tardinata Hartert

*Eremomela flaviventris tardinata* Hartert, Bull. Brit. Orn. Cl., **43**, 1923, p. 149: Sagayo, Mwanza, Tanganyika Territory.

1 ♂, 1 ♀, Sagayo, Tanganyika Territory, 2 November 1922.

These two specimens (of which the female is the type of this race) were in Lord Rothschild's museum at Tring, and have not been seen by me.

Sclater[1] considers *tardinata* a synonym of *crawfurdi*. Inasmuch as I have seen absolutely no material so I cannot form an opinion, but Hartert[2] writes of the type that it is, " . . . much darker on the upperside and sides of body, and smaller than *E. f. crawfurdi*, of which we have only one skin from Loita, collected by A. Blayney Percival. I doubt that these differences are merely individual, and rather think that *tardinata* is a good subspecies, but it requires further confirmation."

Loveridge[3] found the nest of the type at Sagayo on 2 November. It measured 60 x 40 mm. inside, and, " . . . was composed of fine fibres, grass, and raw cotton, lined with very fine grass and a little cotton. It contained two white eggs finely speckled with black and purple spots, especially thick around the larger poles. They measured 15 x 10.5 mm."

### Eremomela scotops occipitalis (Fischer & Reichenow)

*Tricholais occipitalis* Fischer and Reichenow, Journ. f. Ornith., 1884, p. 181: Pangani River, Tanganyika Territory.

1 ♀, immature, Kilosa, Tanganyika Territory, 12 January 1921.
1 ♂, adult, Kilosa, Tanganyika Territory, 2 February 1921.
"Also Ilonga near Kilosa." (A.L.)

This race of the green-capped Eremomela occurs in scrub country from Nairobi and Kyambu in Kenya Colony, south through northeastern Tanganyika Territory (Kilosa to Pangani River.) In the Ikoma district, and the Bukoba and Mwanza areas, south to Tabora, it is replaced by another form *citriniceps*, which is greener on the back.

The young bird is much paler, less yellowish on the head and underparts, than the adult.

[1] Syst. Avium Aethiop., part ii, 1930, p. 538.
[2] Nov. Zool., **24**, 1928, p. 213.
[3] Proc. Zool. Soc. Lond., 1923, p. 906.

### Camaroptera brachyura littoralis Grote

*Camaroptera pileata littoralis* Grote, Orn. Monatsb., **19**, 1911, p. 163: Mikindani, Tanganyika Territory.

1 ♂, Kilosa, Tanganyika Territory, 26 November 1920.
1 ♀, Kilosa, Tanganyika Territory, 1 February 1921.

Sclater[1] considers *littoralis* as a probable synonym of *bororensis* Gunning and Roberts, and states that *pileata* occurs in Zanzibar, " . . . and probably the neighboring coastlands of eastern Africa," in which case the present two birds would have to be considered *pileata*. However, other workers have concluded that *pileata* is entirely restricted to the island of Zanzibar. Because of the uncertainty attached to the status of *littoralis*, I prefer not to make any definite disposition of it as a synonym, especially since I have no *bororensis* for comparison.

The male is immature and has the crown greenish; the female is fully adult and has the crown pure gray.

Previously this race (if distinct) was known only from Mikindani, in extreme southeastern Tanganyika Territory.

### Camaroptera brevicaudata abessinica Zedlitz

*Camaroptera griseoviridis abessinica* Zedlitz, Journ. f. Ornith., 1911, p. 338: Harar, Ethiopia.

1 ♂, Ngong Forest, Kenya Colony, 14 July 1919.

The present specimen is in too poor condition to be identified satisfactorily to subspecies except by locality. It is in very worn plumage and badly stained.

### Camaroptera brevicaudata erlangeri Reichenow

*Camaroptera erlangeri* Reichenow, Vög. Afr., **3**, 1905, p. 617: southern Italian Somaliland.

1 ♂, Mombasa, Kenya Colony, 20 May 1918.

Although Sclater[2] considers *erlangeri* to be a synonym of *griseigula*, I find it is a perfectly valid form, characterized by its pure gray upperparts and very whitish abdomen, and small size. The present example

[1] Syst. Avium Aethiop., part ii, 1930, p. 542.
[2] Syst. Avium Aethiop., part ii, 1930, p. 544.

has a wing length of 51.5 mm., while males of *griseigula* range from 54–60 mm. in this regard.

The single specimen collected is in fine, fresh plumage.

### Hylia prasina prasina Cassin

*Sylvia prasina* Cassin, Proc. Acad. Nat. Sci., Phila., **7**, 1855, p. 325: Gaboon.

1 ♂, between Mwanza and Bukoba, Tanganyika Territory, between November 1922 and January 1923.

While freely admitting the very distinct features of this genus I cannot see any good reason for following Sclater[1] who puts it in the *Nectariniidae*. His action is based on the comments of Bannerman and Bates[2] who find that the hyoid horns are very long in this bird, resembling the condition found in the sunbirds. However, they find this condition in *Pholidornis* as well, but Sclater is not very consistent in his course, as he does not put this genus in the *Nectariniidae,* but in the *Ploceidae*. There is nothing surprising in the fact that one member of a family parallels to some extent the characters of a different group,—it is merely an indication of the range of ecological niches occupied by that family. It would be more surprising if such cases did not occur.

The typical race of this bird occurs from Portuguese Guinea, Ivory Coast, Gold Coast, Cameroon, and Gaboon, east to western Kenya Colony and northwestern Tanganyika Territory.

The present specimen is rather large, having a wing length of 69.5 mm.

### Cisticola juncidis perennia Lynes

*Cisticola juncidia perennia* Lynes, Ibis, 1930, Suppl., p. 105: Mokia, near Lake George, Uganda.

1 ♂, Kome Island, Mwanza, Tanganyika Territory, 24 November 1922.

This specimen, which is in molt, was sexed by Loveridge's native collector as a female, but judging by its size and by the tail pattern,

[1] Syst. Avium Aethiop., part ii, 1930, p. 712.
[2] Ibis, 1924, pp. 253–254.

it seems to be a male, and that the skinner's determination was wrong. The wing is 50 mm. long, the tail 33 mm.

Lynes[1] writes that the majority of adults " . . . have their complete post-nuptial moult during August, September, and October." The present example was, therefore, a trifle late in its molt.

### Cisticola ayresii mauensis van Someren

*Cisticola terrestria mauensis* van Someren, Nov. Zool., **29**, 1922, p. 207: Mau, Kenya Colony.

1 unsexed, probably immature male, Eldoret, Kenya Colony, 9 November 1920.

This form of the striped grass-warbler is found in the highlands of Kenya Colony. According to Lynes[2] it breeds chiefly during the big rains, April to July, but also during the small rains, November and December. The present example apparently was hatched some time during the big rains as it was full grown, but obviously still immature when collected at the beginning of the little rains.

### Cisticola ayresii entebbe Lynes

*Cisticola ayresii entebbe* Lynes, Ibis, 1930, Suppl., p. 154: Entebbe, Uganda.

1 adult ♀, Kabare, Bukoba, Tanganyika Territory, 13 January 1923.
1 immature ♂, Kabare, Bukoba, Tanganyika Territory, 30 January 1923.

The adult female is in worn plumage.

Lynes (*loc. cit.*) writes that this race inhabits Uganda, and the neighboring portions of northwestern Tanganyika Territory, Ruanda, and the Kivu district, Belgian Congo.

These are the two specimens mentioned by Lynes (p. 156) as, " . . . ex. Mus. Comp. Zool. Camb. Mass. 2 (Loveridge)."

The adult female has a wing length of 42 mm., tail 24 mm.

[1] Ibis, Supplement, 1930, p. 106.
[2] Ibis, 1930, Suppl., p. 154.

### Cisticola chiniana procera Peters

*Cisticola procera* Peters, Journ. f. Ornith., 1868, p. 132: Tete, Lower Zambesi.

1 ♂, 1 ♀, Lumbo, Mozambique, 15 July 1918.

The birds are in winter plumage. The male is exactly like the colored drawing in Lynes' monograph[1] which, in fact, was made from a specimen collected by Loveridge at the same time as the above two.

This race occurs from central Tanganyika Territory (Morogoro, Iringa, etc.), south through Nyasaland and Mozambique to the Lower Zambesi. Lynes[2] notes that birds, " . . . from the coastal District of Dar es Salaam all appear to be typical or very near *heterophrys*, but further inland, about Magogoni, on the low ground of the Ruvu in the southeastern part of the Morogoro district . . . birds are intermediate in size between *heterophrys* and *procera* . . . and very like typical *procera* in their winter dress . . ." The present race has seasonal plumages, while *heterophrys* has a perennial type.

### Cisticola chiniana heterophrys Oberholser

*Cisticola heterophrys* Oberholser, Ann. Carnegie Mus., **3**, 1906, p. 496: Mombasa, Kenya Colony.

1 ♂, 1 ♀, Dar es Salaam, Tanganyika Territory, 25 June 1918.
1 adult ♂, 1 adult ♀, 1 immature ♂, Kilosa, Tanganyika Territory, 7–28 January 1921.

The male from Dar es Salaam was probably in breeding condition when shot; the female from there is in an advanced stage of the complete molt. The adult male from Kilosa is in good fresh plumage with two old rectrices; the female from there may have been wrongly sexed as it seems to be a male in size; it is in worn plumage and is without a tail. The immature male is small, like an adult female in size, but has the underparts somewhat suffused with yellowish buff.

This race occurs in eastern Tanganyika Territory and coastal Kenya Colony. In the latter country it ranges inland only some 20 miles or so from the coast while in the former country it occurs as far as 160 miles inland. In Kenya Colony its altitudinal range is from sea

[1] Ibis, 1930, Suppl., pl. x, fig. 36.
[2] Ibid., p. 258.

level to 600 feet, while in Tanganyika Territory it is known from as high as 1,600 feet.

Between Kilosa and Gulwe, only 83 kilometers farther west, the birds change from *heterophrys* to *fischeri*.

### Cisticola chiniana fischeri Reichenow

*Cisticola fischeri* Reichenow, Journ. f. Ornith., 1891, p. 162: Tura, Tabora district, Tanganyika Territory.

1 ♂, Pooma, Tanganyika Territory, 5 October 1922.

This specimen is an immature bird; has just completed the adult remiges and started the new rectrices, but has no new head and body feathers yet. The type of *fischeri* is an immature bird like this one; the adult is quite different.

Inasmuch as the immature plumages of *fischeri*, *chiniana*, *frater*, *procera*, and *ukamba* are all much alike, the present identification is based largely on geographic grounds.

### Cisticola woosnami schusteri Reichenow

*Cisticola schusteri* Reichenow, Journ. f. Ornith., 1913, p. 557: Uluguru Mountains, Tanganyika Territory.

1 ♀ (= ♂), Mbeta, Uluguru Mountains, Tanganyika Territory, 24 July 1922.

1 ♂, Mwanza, Tanganyika Territory, 24 November 1922.

The Mbeta bird is in an advanced stage of the molt, which is noticeable in the remiges and rectrices. The Mwanza bird is in worn dress, and was just beginning to renew the feathers of the head, and the rectrices.

Lynes[1] writes that " . . . on present evidence it is doubtful whether *schusteri* is recognizable . . . but . . . the name is considered worthy of retention; it antedates *soror*, the name given to the same bird in the south Kilimanjaro district."

This race inhabits the interior plateau of Tanganyika Territory from Moshi to the Mwanza, Tabora, and Iringa districts.

[1] Ibis, 1930, Suppl., p. 299.

### Cisticola chubbi Sharpe

*Cisticola chubbi* Sharpe, Ibis, 1892, p. 157: Kimangitchi, Mt. Elgon.

1 ♂, Kabale, Ruanda, Uganda, 20 September 1919.

The bird was just completing its molt when collected.

This grass warbler is an inhabitant of the high country of Western Kenya Colony, Uganda, and adjacent parts of the Belgian Congo, Urundi, Ruanda, and western Tanganyika Territory.

### Cisticola hunteri prinioides Neumann

*Cisticola prinioides* Neumann, Journ. f. Ornith., 1900, p. 304: Mau, Kenya Colony.

1 ♂ (= ♀), Tumu Tumu, Kenya Colony, October 1920.

This specimen is in a molting condition and appears to be an immature bird just acquiring adult plumage. Unfortunately the bill was shot off, making it a little more difficult to determine the age of the bird.

### Cisticola cantans pictipennis Madarasz

*Cisticola pictipennis* Madarasz, Ann. Mus. Hung., **2**, 1903, p. 205: Moshi, Tanganyika Territory.

1 ♂, Ngong, Kenya Colony, 30 July 1919.

Admiral Lynes has examined this specimen and considers it as probably taken at the end of the breeding season. It is in very worn plumage. It is rather small, having a wing length of only 57 mm.

This race occurs in the interior of Kenya Colony, and south to the Usambara Mountains in Tanganyika Territory.

### Cisticola erythrops sylvia Reichenow

*Cisticola sylvia* Reichenow, Orn. Monatsb., 1904, p. 28: Ulegga, *i.e.*, Warega, near Lake Albert.

1 ♂, 1 ♀, Kilosa, Tanganyika Territory, 1–5 January 1921.
1 ♀, Uluguru Mountains, Tanganyika Territory, 25 May 1921.
1 ♂, Bungu, Usambara Mountains, Tanganyika Territory, 16 September 1921.
1 ♀, Bagilo, Uluguru Mountains, Tanganyika Territory, 15 May 1922.

The specimen from Bungu, Usambara Mountains, is typical *sylvia;* all the others are really intergrades between *sylvia* and *nyasa.*

The Bungu bird was just finishing its molt when shot; the other specimens are in worn plumage; one of the latter, taken on 5 January, was just starting to molt. According to Lynes[1] the majority of adults molt in August, September, and October, but the present series indicate that some birds may be found molting at almost any time of the year.

The present race occurs in Uganda, the northeastern and central parts of the Belgian Congo, and the interior of Kenya Colony and of the northern half of Tanganyika Territory.

In central Tanganyika Territory *sylvia* and *nyasa* merge. The birds from Kilosa and the Uluguru Mountains have the smaller size of *nyasa* but the coloration, red face, etc., of *sylvia.*

### Cisticola galactotes haematocephala Cabanis

*Cisticola haematocephala* Cabanis, Journ. f. Ornith., 1868, p. 412: Mombasa, Kenya Colony.

1 ♂, Mombasa, Kenya Colony, 31 May 1918.

This specimen, a topotype, is in worn plumage. It was probably a breeding bird, both by date and by the abraded condition of its feathers.

Unlike most of the subspecies of *C. galactotes,* this form prefers dry, bushy localities to swampy, grassy ones. Whether its fuller, grayer, less rufous-buff coloration is correlated with its environmental peculiarities is an open question, but the coincidence, at least, is there.

### Cisticola galactotes suahelica Neumann

*Cisticola lugubris* suahelica Neumann, Orn. Monatsb., **13**, 1905, p. 78: Beger, Bagamoyo district, Tanganyika Territory.

1 ♀, Tindiga, Kilosa, Tanganyika Territory, 4 February 1922.
1 ♂, Kilosa, Tanganyika Territory, 24 April 1922.

The male is in very worn plumage; the female is in good, fairly fresh feathering. The male has a wing length of 59 mm., tail 46 mm.; the female—wing 51.5, tail 39 mm.

This race occurs in the interior of northern and central Tanganyika Territory and the adjacent portion of the eastern Belgian Congo.

[1] Ibis, 1930, Suppl., p. 372.

### Cisticola robusta ambigua Sharpe

*Cisticola ambigua* Sharpe, Bull. Brit. Orn. Cl., **11**, 1900, p. 28: Ravine' Mau, Kenya Colony.

1 immature ♀, Ngong, Kenya Colony, 10 July 1919.
1 adult ♂, 1 adult ♀, 1 immature unsexed, Nairobi, Kenya Colony, 20 August, 1920.

The immature female from Ngong is probably about three weeks older than that from Nairobi. The latter is probably also a female, judging by size.

This race of the stout grass warbler inhabits the interior of Kenya Colony. It differs from the Uganda race, *nuchalis*, only in its larger size.

### Cisticola robusta nuchalis Reichenow

*Cisticola nuchalis* Reichenow, Orn. Monatsb. **1**, 1893, p. 61: Kagera, Uganda.

1 ♀ (prob. ♂), Kabura, Mawokota, Uganda, 28 August 1919.

This specimen is in very worn plumage. It is large (wing 63 mm.) and is therefore probably a male.

### Cisticola natalensis valida (Heuglin)

*Drymoeca valida* Heuglin, Journ. f. Ornith., 1864, p. 258: Wau, Bahr el Ghazal.

1 imm. ♂, Sagayo, Mwanza, Tanganyika Territory, 4 November 1922.
2 ad. ♂, Bukoba, Tanganyika Territory, 1 December 1922.

The immature bird is in a molting condition, well advanced in the remiges, beginning in the rectrices, head, and body.

The Bukoba birds are in rather fresh plumage.

This bird inhabits the country to the north, west, and south of Lake Victoria—from the southern Sudan, Uganda, the eastern Congo, to northern and central Tanganyika Territory.

### Cisticola brachyptera isabellina Reichenow

*Cisticola isabellina* Reichenow, Orn. Monatsb., **15**, 1907, p. 60: Songea, southern Tanganyika Territory.

1 ♂, 1 ♀, Bagilo, Uluguru Mountains, Tanganyika Territory, 8 May 1922.

The "female" is probably a male, judging by its size. Both the present specimens have wing lengths of 47 mm., and tails 33 mm. long.

The male was probably a breeding bird. Lynes[1] writes that the breeding season is not definitely known in central Tanganyika Territory, " . . . but in the northern part of the Morogoro district—that part through which the main railroad passes—birds probably breed more or less all the year round, and the general breeding season very likely varies a good deal with the Rains . . . In 1927 April and May must have been full breeding months."

### Cisticola nana Fischer and Reichenow

*Cisticola nana* Fischer and Reichenow, Journ. f. Ornith., 1884, p. 260: N'garuka, Arusha district, Tanganyika Territory.

1 ♂, (probably ♀), Kilosa, Tanganyika Territory, 21 January 1921.

Judging by size, this specimen is a female (wing 43 mm.). It is in good plumage, probably not a breeding bird.

This grass-warbler lives in the thorn bush and Acacia savanna country of eastern Africa from northern Tanganyika Territory through Kenya Colony to Somaliland, southern Ethiopia, and northern Uganda.

### Melocichla mentalis orientalis (Sharpe)

*Cisticola orientalis* Sharpe, Cat. Bds. Brit. Mus., **7**, 1883, p. 245: Pangani River.

1 ♂, 1 ♀, Uluguru Mountains, Tanganyika Territory, 7 May 1921.

"Also Dar es Salaam, Bagilo, and Kilosa." (A.L.)

The present two specimens are the palest examples of this race among a series of some 20 specimens. They are as pale below as many examples of *amaurora*, but above are paler than any other specimens of *orientalis*, a race which has a paler dorsum than *amaurora*.

This race of the giant grass warbler occurs throughout the regions covered by the present collection. In the eastern Belgian Congo and Uganda it is replaced by *amaurora*, a form which is darker above and usually paler below.

The two individuals listed above are in fresh plumage; in fact the female was just completing the rectricial molt when collected.

This species occurs in swampy and bushy areas.

[1] Ibis, 1930, Suppl., p. 485.

### Prinia mistacea immutabilis van Someren

*Prinia mistacea immutabilis* van Someren, Bull. Brit. Ornith. Cl., **40**, 1920, p. 93: Lake Nakuru, Kenya Colony.

1 ♂, Nairobi, Kenya Colony, 20 June 1919.

This specimen is in worn plumage. The form is known to nest during June and July on Mt. Elgon, and it is therefore a little surprising to find it in such worn condition so early at Nairobi.

This race occurs throughout Kenya Colony from Ukamba westward across Uganda to southern Cameroon. It also occurs in the north-central part of Tanganyika Territory.

### Prinia mistacea graueri Hartert

*Prinia mistacea graueri* Hartert, Nov. Zool. **27**, 1920, p. 457: near Baraka, n.w. Lake Tanganyika.

1 ♂, Kabura, Mawokota, Uganda, 20 August 1919.

The single specimen here recorded is in fresh plumage and agrees best with the description of *graueri*, although by locality it may be slightly intermediate between that form and *immutabilis*.

### Prinia mistacea tenella (Cabanis)

*Drymoica tenella* Cabanis, in von der Decken, Reise, **3**, 1869, p. 23: Mombasa, Kenya Colony.

1 ♂, Morogoro, Tanganyika Territory, 24 August 1917.
1 ♂, 1 ♀, Lumbo, Mozambique, 28 July 1918.
1 ♀, Kilosa, Tanganyika Territory, 7 January 1921.
1 ♀, Uluguru Mountains, Tanganyika Territory, 20 May 1921.
"Also Mombasa and Bungu." (A.L.)

These birds are a little smaller than *immutabilis*. This race occurs along the coastal districts of eastern Africa from southern Italian Somaliland to the lower Zambesi valley, inland in the central part of its range to Morogoro, Kilosa, and the Kilimanjaro area.

Meise[1] has recently described a subspecies *mutatrix* from Mbamba Bay, Lake Nyasa, said to be like *tenella* but with double molt!

[1] Orn. Monatsb., **44**, 1936, p. 23.

### Prinia leucopogon reichenowi (Hartlaub)

*Burnesia reichenowi* Hartlaub, Journ. f. Ornith., 1890, p. 151: Njangalo, northeastern Belgian Congo.

1 unsexed, Uganda, 1919.
1 ♀, Kabare, Bukoba, Tanganyika Territory, 12 December 1922.
1 ♂, Chantwara, Bukoba, Tanganyika Territory, 15 January 1923.

This race of the white-chinned longtail differs from the typical race in having much more white on the underparts; isabelline instead of grayish under tail coverts, and purer gray upperparts. It ranges from the eastern Uele and Ituri districts in the Belgian Congo, through Uganda to the Nandi, Kavirondo, and Elgon districts of Kenya Colony, and to northwestern Tanganyika Territory. The nominate form occurs from Cameroon to the Middle Congo.

There seems to be some question as to the exact location of the type locality, Njangalo. Sclater[1] writes that it is in the northeastern Belgian Congo, while Gyldenstolpe[2] places it in Tanganyika Territory. The type was collected by Emin Pasha during his memorable journey with Stanley from Wadelai to Bagamoyo. However, neither Stanley ("In Darkest Africa"), Emin, nor Stuhlmann definitely locate Njangalo.

According to van Someren[3] this warbler is common in the scrub and open forests in Uganda.

## Family MUSCICAPIDAE. Old World Flycatchers

### Muscicapa striata striata (Pallas)

*Motacilla striata* Pallas, Vroeg's Catal. Verzam. Vög. Adumbrat., 1764, p. 3: "hier", that is, Holland.

1 ♀, Dar es Salaam, Tanganyika Territory, 10 November 1919.
1 ♀, Mwanza, Tanganyika Territory, 9 December 1922.

"Also Dodoma, December 7, 1918, and Kilosa, 15 February 1921." (A.L.)

This European flycatcher is a common and regular migrant and winter visitor in the regions covered by this collection.

[1] Syst. Avium Aethiop., part ii, 1930, p. 572.
[2] Kungl, Sv. Vet. Akad. Handlugr., 1924, p. 152.
[3] Ibis, 1916, p. 458.

### Muscicapa striata tyrrhenica Schiebel

*Muscicapa striata tyrrhenica* Schiebel, Ornith. Jahrb. **21**, 1910, p. 102: Corsica.

1 ♂, Kilosa, Tanganyika Territory, 1 December 1920.

This bird has not been previously recorded from anywhere in the Ethiopian region as far as I know. The specimen agrees with the description of *tyrrhenica*, which I have not otherwise seen.

### Alseonax adustus fülleborni (Reichenow)

*Muscicapa fülleborni* Reichenow, Orn. Monatsb., **8**, 1900, p. 122: Rupira, Tanganyika Territory.

1 ♀, Uluguru Mountains, Tanganyika Territory, 26 May 1921.

All recent writers on African birds have agreed in calling *fülleborni* a synonym of *subadustus* of Shelley, and in lieu of adequate material, I did likewise, referring five specimens from the Uluguru and Usambara Mountains to *subadustus*.[1] Since then, I have seen a true *subadustus* (from Kipushi, Katanga) which agrees with Shelley's description of that race, and which indicates at once that the birds of the Tanganyikan Mountains belong to a different form. For the latter Reichenow's name *fülleborni* is available. This race agrees in size with *subadustus* (wings, male 60–62, female 59–63.5 mm., as against *adustus*—wings, male 66–68.5, female 64–65 mm.), but is darker above, as dark as *adustus* but less olive brownish, more grayish. I have examined six specimens of *fülleborni*, six of *adustus*, one of *subadustus*, and two of *angolensis*. From the last named, the present form differs in being darker above and on the breast.

In his review of the races of *Alseonax murinus*[2] Grote considers *adustus* and *subadustus* as races of *murinus*. With this arrangement I disagree as the *murinus* (or more properly *minimus*) group is a very different, brownish type of bird. The two groups are closely related, but seem to be specifically distinct. In the Usambara Mountains the two occur together.

*Alseonax adustus fülleborni* appears to be known from only six localities, the type locality Rupira south of Mahenge, the Uzungwe, Ukinga, Rungwe, Uluguru, and Usambara Mountains. It is not known from Kilimanjaro or Meru Mountain. The forms *angolensis* and

[1] Ibis, 1928, p. 84.
[2] Orn. Monatsb., **28**, 1920, pp. 112–115.

*subadustus* are very similar, certainly the least well marked of any of the races. Grote writes that *angolensis* is known only from a young bird. There are two adults in the American Museum of Natural History (Boulton coll.) which are similar to the adult of *subadustus* from the Katanga, but slightly darker above.

Bangs and Loveridge[1] record this bird from Kigogo in the Uzungwe Mountains, after direct comparison with Uluguru specimens. Their birds from Ukinga Mountains (Madehani) and from Rungwe (Ilolo) were juvenals, and therefore uncertain subspecifically.

Lynes[2] calls birds from Njombe *subadustus* but had not examined any *fülleborni.*

### Alseonax minimus pumilus Reichenow

*Alseonax pumila* Reichenow, Journ. f. Ornith., 1892, pp. 32, 218: Bukoba.

Immature ♀, Chantwara, Bukoba, Tanganyika Territory, 6 January 1923.

Adult ♀, Kabare, Bukoba, Tanganyika Territory, 16 January 1923.

These specimens, coming from the type locality of *pumilus*, must belong to this race, which is fortunate as they are in poor plumage condition and would otherwise be very difficult to identify subspecifically.

The immature bird has the feathers of the upper back, scapulars, upper wing coverts, rump, and upper tail coverts, with large subterminal buffy-whitish spots, giving the whole upper parts a coarsely spotted appearance. The feathers of the forehead, crown, and occiput are blackish with whitish shaft streaks, distally enlarging to form spatulate, subterminal spots. The feathers of the breast are narrowly margined with dull earth brown, causing that region to assume a squammated appearance.

According to Grote's review of this species,[3] the range of *pumilus* is the country bordering on the west and northwest coasts of Lake Victoria. Van Someren[4] found it fairly common in the more open parts of the Kyetema and Mabira Forests. Nests with eggs were obtained in May and July and in December and January. Young in first plumage were taken in September by him.

[1] Bull. Mus. Comp. Zool., **75**, 1933, p. 188.
[2] Journ. f. Orn., **82**, 1934, Sonderheft, p. 76.
[3] Orn. Monatsb., , 1920 **28**, p. 114.
[4] Ibis, 1916, p. 378.

### Alseonax minimus murinus Fischer and Reichenow

*Alseonax murinus* Fischer and Reichenow, Journ. f. Ornith., 1884, p. 54: Meru, Tanganyika Territory.

1 ♂, Nairobi, Kenya Colony, 21 October 1915.
1 ♀, Ngong Forest near Nairobi, Kenya Colony, 14 July 1919.

The birds of this species inhabiting Kenya Colony from Nairobi northward to Mt. Kenya are a curiously variable lot of intergrades between typical *murinus* and *pumilus*, but, on the whole, better identified as the former. The present two specimens are rather dark and may be somewhat stained below. Yet this tendency to produce dark individuals is of interest in connection with the fact that in the Usambara Mountains, Tanganyika Territory, all the birds are very dark, and have been separated under the name *rochli* Grote.

*Alseonax minimus interpositus* van Someren is doubtfully distinct from *murinus*. If, however, it should be maintained by future work, the present specimens would have to be referred to van Someren's race.

### Alseonax infulatus infulatus (Hartlaub)

*Muscicapa infulata* Hartlaub, Proc. Zool. Soc. Lond., 1880, p. 626: Upper White Nile, probably Magungo or Wadelai.

1 ♂, Ankole Uganda, 5 September 1919.
1 ♀, Kabare, Bukoba, Tanganyika Territory, 13 January 1923.

This flycatcher occurs from the southern Anglo-Egyptian Sudan through Uganda, east to western Kenya Colony (Mt. Elgon, Kendu, Kisumu and south to the Ruanda-Tanganyika frontier. In Ruanda it is replaced by a larger bird, more whitish ventrally (*A. i. ruandae* Gyldenstolpe), and in the Kivu district by another form with light rufous sides (*A. i. gnomae* Gyldenstolpe). I have seen no specimens from southwestern Tanganyika Territory and cannot say what the form found there and in northern Nyasaland may be. It is not impossible that typical *infulatus* may occur south through western Tanganyika Territory (to the east of *ruandae* and *gnomae*) to Nyasaland.

The present two specimens have the following dimensions: male—wing 70, tail 54, culmen 15 mm.; female—wing 68, tail 54, culmen 14 mm. These figures are larger than those given by Gyldenstolpe[1]

[1] Kungl. Sv. Vet. Akad. Handlngr., 1924, p. 200.

who gives the wing length as 66 in a male, 67 mm. in a female, the tail, 54 mm. as in the present two birds. His culmen measurements cannot be taken from the base of the bill to the tip (as mine are), for they are only 11.5 (male) and 11 mm. (female). However, although somewhat intermediate in size between *infulatus* and *ruandae*, Loveridge's two birds are better referred to the former.

### Parisoma böhmi böhmi Reichenow

*Parisoma böhmi* Reichenow, Journ. f. Ornith., 1882, p. 209, pl. ii, fig. 2: Seke, Ugogo.

"One collected at Dodoma, Tanganyika Territory, on 19 December 1918, is now in the Nairobi Museum." (A.L.)

### Bradornis pallidus suahelicus van Someren

*Bradornis murinus suahelicus* van Someren, Bull. Brit. Orn. Cl., **41**, 1921, p. 104: Londiani, Kenya Colony.

Immature ♀, Kilosa, Tanganyika Territory, 1 January 1921.
Adult ♀, Kilosa, Tanganyika Territory, 10 January 1921.

The adult is in worn plumage and is molting the wings. The young bird is in the streaked and spotted plumage of immaturity, and is noticeably lighter generally than another in comparable plumage from Kitunga, Kenya Colony.

This bird inhabits Kenya Colony, Uganda, and the northern half of Tanganyika Territory. Farther south (Mahenge southwards) it is replaced by the smaller, grayer race, *B. pallidus murinus*. It is widely distributed as its ecological habitat happens to be the scrub and thorn-bush country which is so extensive in eastern Africa.

### Bradornis microrhynchus taruensis van Someren

*Bradornis taruensis* van Someren, Bull. Brit. Orn. Cl., **41**, 1921, p. 104: Campiyabibi, Kenya Colony.

1 ♂, Dodoma, Tanganyika Territory, 7 December 1919.

This specimen is somewhat intermediate between typical *microrhynchus* and *taruensis*, but is, on the whole, nearer to the latter, with which it seems better identified. It constitutes the southernmost record for *taruensis* and extends its range from the Taru desert of

Kenya Colony and the Serengeti Plains east of Mt. Kilimanjaro southwards for approximately 200 miles. Apparently this race has never been recorded previously from Tanganyika Territory, but the specimen recorded by Oberholser from Useri River, near Mt. Kilimanjaro[1] as *Muscicapa striata neumanni* is a typical example of *Bradornis microrhynchus taruensis*.

Aside from the area occupied by *taruensis*, the remainder of Tanganyika Territory is inhabited by the nominate form of this flycatcher.

The present specimen is in very worn plumage and thereby looks more grayish, less brownish than if it were freshly feathered, but a few new back and rump feathers are distinctly brownish in hue.

### Dioptrornis fischeri fischeri Reichenow

*Dioptrornis fischeri* Reichenow, Journ. f. Ornith., 1884, p. 53: Meru Mountain, Tanganyika Territory.

Immature ♂, immature ♀, Ngong Forest, Kenya Colony, 24 July 1919. Adult ♂, adult ♀, Nairobi, Kenya Colony, September 1920.

"Also Tumutumu and Ruanda." (A.L.)

This flycatcher occurs throughout the southern half of Kenya Colony, north to Mts. Kenya and Elgon, west into eastern Uganda, and south to the Kilimanjaro area in Tanganyika Territory. It frequents scrub country as well as the outer edges of the forest and occurs from 2,500 to 11,000 feet above the sea.

In the Usambara Mountains it is replaced by *D. f. amani* Sclater, a smaller and paler form. Whether the birds of the Uluguru range are *amani* or *fischeri* I cannot say.

In south-central Tanganyika Territory it is replaced by the northern race of *D. nyikensis* (*uhehensis*), a brownish instead of bluish-gray bird.

### Melaenornis edolioides ugandae van Someren

*Melaenornis lugubris ugandae* van Someren, Bull. Brit. Orn. Cl., **41**, 1921, p. 104: Sezibwa, Uganda.

1 ♂, Ankole, Uganda, 2–6 September 1919.

This bird occurs throughout Uganda, the eastern Ituri district of the Belgian Congo, and western Kenya Colony (Kavirondo, Mt. Elgon, to Nakuru and Mt. Uraguess), south to Mwanza in Tanganyika

[1] Proc. U. S. Nat. Mus., **28**, 1905, p. 907.

Territory. This race differs from typical *edolioides* (from Senegal) in having shorter tails; 82–103 mm. in *ugandae*, 107–116 mm. in *edolioides*.

Van Someren[1] has taken eggs of this bird in April, May, and June.

[1] Ibis, 1916, pp. 376–377.

He found the nests in low bushes and in banana trees.

### Melaenornis pammelaina tropicalis (Cabanis)

*Melanopepla tropicalis* Cabanis, Journ. f. Ornith., 1884, p. 241: Ikanga, Ukamba, Kenya Colony.

1 ♂, Morogoro, Tanganyika Territory, 23 July 1917.
1 ♂, Lumbo, Mozambique, 13 July 1918.
1 ♂, Bungu, Usambara Mountains, Tanganyika Territory, September 1921.

"Also Nairobi, and Kilosa." (A.L.)

All three specimens are in fresh plumage.

The black flycatcher is widely distributed throughout the region covered by the present collection. They are ecologically tolerant birds, that is, they live in fairly wide variety of habitats, and being birds of the lowlands rather than of great altitudes, their distribution is, consequently, practically continuous throughout East Africa.

In Kenya Colony and northern Tanganyika Territory the breeding season is from March to June.

### Empidornis semipartitus kavirondensis (Neumann)

*Bradyornis kavirondensis* Neumann, Journ. f. Ornith., 1900, p. 257: Kwa Kissero, Kavirondo.

1 ♂, 1 ♀, Sanga, Mwanza, Tanganyika Territory, 16 October 1922.

"Common in many places in the Mwanza thorn-bush country." (A.L.)

These two specimens (the only ones seen of this race) have the following dimensions: male—wing 98, tail 86, culmen 15 mm.; female—wing 95, tail 79, culmen 14 mm. Rothschild[1] gives the wing length as 96–101, and the tail as 85–92 mm., so it seems that the two birds listed above are rather small examples of *kavirondensis*.

The distribution of this form is from the region around Lake Rudolf (Turkana and Rendile districts) south through Kenya Colony and

[1] Bull. Brit. Orn. Cl., **43**, 1922, p. 45.

eastern Uganda to Mwanza, the Wembere steppes and the Ruwana River. According to Neumann (*loc. cit.*) it is very common on the east shore of Lake Victoria, less so on the south side, and not found on the Uganda shore (that is, west and northwest).

Recently Schuster[1] has obtained this bird at Schimawutu, in the Unyamwesi country.

The two birds collected are in fresh plumage and look as if they had only recently completed the postnuptial molt when collected.

### Chloropeta massaica storeyi Ogilvie-Grant

*Chloropeta storeyi* Ogilvie-Grant, Bull. Brit. Orn. Cl., **19**, 1906, p. 32: Chedaro, that is Nairobi River, Kenya Colony.

1 ♂, 1 ♀, Ngong Forest near Nairobi, Kenya Colony, 24–26 July 1919.

These two specimens are practically topotypical *storeyi* and agree very closely with the description of this form. Both birds are molting the remiges.

I have not seen any typical *massaica* and therefore cannot decide on the validity of *storeyi,* but van Someren[2] finds some variation in his series of topotypes and writes that it may be that *storeyi* is not separable from *massaica.*

Granvik[3] records Nairobi birds (topotypes of *storeyi*) as *massaica.*

### Bias musicus feminina Jackson

*Bias feminina* Jackson, Bull, Brit. Orn. Cl. **16**, 1906, p. 87: Toro, Western Uganda.

1 ♂, Katabasungu, Budu, Uganda, 2 November 1919.
1 "♂" (= ♀), Kilosa, Tanganyika Territory, 14 February 1921.
1 ♀, Kabare, Bukoba, Tanganyika Territory, 17 January 1923.

"Also Ruanda, Uganda." (A.L.)

In the absence of comparative material I can do nothing with these birds other than to refer them to this race with which they were identified some years ago by either Dr. Hartert or Mr. Goodson at the Tring Museum. The Kilosa bird, which, judging from its locality, should be paler above than the Bukoba specimen, nearer perhaps to *changamwensis,* is, as a matter of fact, the darker of the two. The

[1] Journ. f. Ornith., 1926, p. 712.
[2] Nov. Zool., **29**, 1922, p. 97.
[3] Journ. f. Ornith., 1923, Sonderheft, p. 125.

crown is blacker, the rest of the upperparts richer, deeper chestnut brown than in the more western bird.

Van Someren[1] found this species nesting in March and in September in Uganda.

### Batis mixta (Shelley)

*Pachyprora mixta* Shelley, Proc. Zool. Soc. Lond., 1889, p. 359: Kilimanjaro.

Adult ♂, immature ♂, adult ♀, Uluguru Mountains, Tanganyika Territory, 2 June 1921.

In a previous paper[2] I noted after a study of 14 specimens of this bird from the Uluguru and Usambara Mountains that, " . . . this species and *B. dimorpha* are very closely related, and may eventually prove to be the same. The little white flecks on the forehead immediately above the black patches on the sides (of the head) are very variable, being present in two and absent in four of the males of the . . . series." Since then I have examined the above three birds and three from Kilimanjaro (topotypical *mixta*) and I find that none of the color characters supposed to distinguish *dimorpha* and *mixta* hold good, but the latter may be identified by its much shorter tail. Whether the present bird is a species or a race of *capensis* (of which *dimorpha* is also a subspecies) is a question that depends for its answer more on opinion than on facts.

*B. mixta* is stated to differ from *dimorpha* in color as follows: Males of the former are said to have small white spots on the nape and five white superciliary stripes, and a narrower black pectoral band, while females of the former are said to have the reddish brown on the breast not darker than that on the throat and without a white area on the lower throat separating the two rufescent areas. The present adult male bird has no white on the nape, lores, or above the eyes, and has a very wide black breast band; the adult female, has a transverse white band on the lower throat and the brown on the breast and flanks much darker than on the upper throat.

The young male has a whitish superciliary stripe on either side of the head, and has the throat, breast, and flanks heavily washed with chestnut-tawny. The black breast band is showing through the tawny feathers as an irregular black transverse patch.

The Poroto Mountains are the southernmost locality for *mixta*, which is otherwise known only from Rungwe; the Ukinga, Uzungwe and Usambara Mountains, and Mt. Kilimanjaro.

[1] Ibis, 1916, p. 381.
[2] Ibis, 1928, p. 85.

### Batis molitor soror Reichenow

*Batis puella soror* Reichenow, Vög. Afr., **2**, 1903, p. 485: Quilimane, Mozambique.

1 ♀, Morogoro, Tanganyika Territory, 20 September 1917.
1 ♂, 1 ♀, Lumbo, Mozambique, 17 July 1918.
1 ♀, Kilosa, Tanganyika Territory, 26 November 1920.

Of this form *B. molitor littoralis* Neumann[1] and *B. soror pallidigula* van Someren[2] are said to be synonyms.[3] I have seen no Zanzibar material, but the two Tanganyikan specimens have darker spots than the Lumbo female, and it may be that they are *littoralis*, which may prove to be a valid form. For the present, I prefer to follow Sclater (*loc. cit.*) and call them all *soror*.

### Batis molitor puella Reichenow

*Batis puella* Reichenow, Jahrb. Hamburg Wissenach. Anst., **10**, 1893, p. 125: Busisi, Tanganyika Territory.

1 ♂, 1 ♀, Nairobi, Kenya Colony, 25 September 1920.
Immature ♂, Pooma, Singida, Tanganyika Territory, 15 October 1922.

"Also Tumutumu." (A.L.)

This race, of which *taruensis* van Someren[4] is said to be a synonym, occurs throughout Uganda, the Kivu district of the Belgian Congo, and Kenya Colony (north to Mt. Elgon and the Northern Guaso Nyiro River) south to Lake Nyasa, the upper part of the Zambesi valley, and Angola, but is not found in the coastal areas of East Africa where it is replaced by *soror*.

The immature male has a small brown throat spot and has the pectoral band mixed brown and black; in other words, it is in post-juvenal molt.

### Batis minor suahelicus Neumann

*Batis minor suahelicus* Neumann, Journ. f. Ornith., 1907, p. 353: Type in Berlin Museum from Kaka, near Kilimanjaro.

[1] Journ. f. Ornith., 1907, p. 350: Zanzibar.
[2] Bull. Brit. Orn. Cl., **41**, p. 103: Lumbo, Mozambique.
[3] cf. Sclater, Bull. Brit. Orn. Cl., **45**, 1925, p. 52.
[4] Bull. Brit. Orn. Cl., **41**, 1921, p. 103: Maungu, Kenya Colony.

1 ♀, Morogoro, Tanganyika Territory, 18 June 1917.
1 ♂, 1 ♀, Dar es Salaam, Tanganyika Territory, 24 June 1918.

"Also Mombasa." (A.L.)

This race occurs in the eastern, coastal parts of southern Kenya Colony and northern Tanganyika Territory inland as far as the Taru desert, the Eastern Serengeti plains, and Morogoro.

These three specimens are in fresh plumage. Their wing lengths are as follows: male 58, females 55 and 56 mm.

### Batis minor nyansae Neumann

*Batis minor nyansae* Neumann, Journ. f. Ornith., 1907, p. 354: Kiva Mtessa, Uganda.

1 ♂, Kabura, Mawokota, Uganda, 22 August 1919.
1 ♂, Ndeza, Ankole, Uganda, 10 November 1919.

These two specimens are in rather worn plumage. The wing length of the male is 60 mm., that of the female, 58 mm.

This race is similar to *suahelicus* but is slightly larger. It occurs from the upper White Nile in the southern Sudan, through Uganda (except the highlands in Toro) and in Kenya Colony from Kisumu to the Kaimosi-Kakamega area, and Mt. Elgon.

In Uganda these flycatchers nest in June and November.

### Platysteira peltata peltata Sundevall

*Platysteira peltata peltata* Sundevall, Oefv. Vet. Ak. Förh., 1850, p. 105: "Caffraria Inferiore", that is, Natal.

Immature ♂, Lumbo, Mozambique, 20 July 1918.
Immature, ♂, Bungu, Usambara Mountains, Tanganyika Territory, September 1921.

"Also the Uluguru Mountains." (A.L.)

*Platysteira cryptoleuca* Oberholser is a synonym. I have examined the type and paratypes and have compared them with other specimens and can find no constant characters for *cryptoleuca*.

This bird occurs from South Africa north through Mozambique to the interior of Tanganyika Territory and of Kenya Colony west to the eastern escarpment of the Rift Valley, and north to Mt. Kenya.

Van Someren[1] suggests that the coastal birds of East Africa may prove to be separable from those of the inland plateau on the basis of the larger size of the latter. Grote[2] has separated the latter under the name *brevipennis*. It is a valid race.

### Platysteira peltata brevipennis Grote

*Platysteira peltata brevipennis* Grote, Anz. Ornith. Ges. Bay., **12**, 1928, p. 135: Magogoni, Ruvu River, Tanganyika Territory.

1 ♂, 1 ♀, Dar es Salaam, Tanganyika Territory, 13 June 1918.

"Also Mombasa." (A.L.)

This race is smaller than typical *peltata*, especially with regard to the wing length (60–65 mm. as against 67–68 mm. in *peltata*.) The male from Dar es Salaam has a wing length of 61 mm., the female 62 mm. This race occurs along the coastal strip from northern Tanganyika north through Kenya Colony to southern Somaliland. That it is wholly a coastal form is indicated by the presence of typical *peltata* in the Uluguru and Usambara Mountains and the Kilimanjaro area.

Both of the present precimens are in molt.

### Platysteira cyanea nyansae Neumann

*Platysteira cyanea nyansae* Neumann, Journ. f. Ornith., 1905, p. 210: Bukoba, Tanganyika Territory.

1 ♀, Ndeza, Ankole, Uganda, 10 September 1919.
1 ♂, Kabare, Bukoba, Tanganyika Territory, 25 December 1922.

"Also Kabale, Uganda." (A.L.)

This race of *Platysteira cyanea* differs from the typical West African form in having the feathers of the back less glossy and in having a fine whitish line on the anterior margin of the forehead. From the race inhabiting Ethiopia it differs in being larger (wings 64–70 in *nyansae*, 59–63 mm. in *aethiopica*.) The present form occurs throughout all of Uganda except the northern part (Turkwell, West Nile, etc.), east to Mt. Elgon, the Kakamega and north Kavirondo country in Kenya Colony, west to the eastern Ituri district in the Belgian Congo, south through Urundi and Ruanda to the Kivu region.

[1] Bov. Zool., **29**, 1922, p. 101.
[2] Anz. Ornith. Ges. Bay., **12**, 1928, p. 135.

According to van Someren,[1] this flycatcher is found in the forest where it frequents the undergrowth. He found it nesting during April and June and also in November and December.

### Erranornis longicauda teresita (Antinori)

*Elminia teresita* Antinori, Cat. Uccelli, 1864, p. 50: Djur, Bahr el Ghazal.

1 ♀, Chantwara, Bukoba, Tanganyika Territory, 21 December 1922.

Sclater[2] has shown that *Elminia schwebischi* Oustalet is a synonym of *teresita.*

In the absence of adequate series I follow the review of the races of this flycatcher written by Sclater and Praed.[3] The present race occurs throughout Uganda, western Kenya Colony (Kibigori, Nandi, Kaimosi and Elgon) and northwestern Tanganyika Territory, west through the Upper White Nile and Bahr el Ghazal to Cameroon. It inhabits the scrubby bush country and also the outer fringes of the dense forests (as at Kaimosi).

Van Someren[4] found it nesting in April and June in Uganda. "It builds an open cup-shaped nest of fibres and grasses, and covers the outside with lichen. The two eggs laid are of a greyish-white ground, spotted toward the larger end with grey-brown, most of the spotting being in the form of a ring around the larger diameter."

### Erannornis albicauda (Bocage)

*Elminia albicauda* Bocage, Journ. Lisboa **22**, 1878, p. 159: Benguella.

1 ♂, Kabura, Mawokota, Uganda, 15 August 1919.

Overholser[5] has shown that the name Elminia of Bonaparte, currently used for this genus is invalidated by Elminia of King (crustacea) and has substituted the present name Erannornis for it.

According to Gyldenstolpe[6] Grote's form *kivuensis* is not valid and this name[7] must be considered a synonym of *albicauda.* When he

[1] Ibis, 1916, p. 382.
[2] Bull. Brit. Orn. Cl., **47**, 1927, p. 119.
[3] Ibis, 1918, pp. 712–713.
[4] Ibis, 1916, p. 383.
[5] Auk, **37**, 1920, p. 302.
[6] Kungl. Sv. Vet. Akad. Handlngr., 1924, p. 223.
[7] Journ. f. Ornith., 1922, p. 485: Kidjwi Island, Lake Kivu.

described *kivuensis*, Grote had no topotypical *albicauda* material available. Hence, although the present specimen agrees fairly well with the characters of *kivensis*, I follow Gyldenstolpe (the only writer who has actually compared Angolan *albicauda* with Ugandan and other Central African "*kivuensis*" specimens) in referring it to *E. albicauda*. Gyldenstolpe uses a trinomial pending proof of the nonvalidity of the Nyasaland birds as a separate race. I prefer to use a binomial until such a race is shown to exist.

The specimen has the following dimensions: wing 64, tail 82, culmen 11 mm.

Sclater[1] recognizes *kivuensis*, but in view of Gyldenstolpe's dissenting conclusions, I do not care to do so without more material.

### Trochocercus albonotatus subcaeruleus Grote

*Trochocercus albonotatus subcaeruleus* Grote, Orn. Monatsb., **31**, 1923, p. 19: Mlalo, Usambara Mountains.

1 ♀, Uluguru Mountains, Tanganyika Territory, 13 May 1921.

This race differs from typical *albonotatus* in being somewhat paler grayish on the upper parts. The difference in color is constant; I have seen 13 specimens of *subcaeruleus* and 4 of *albonotatus*.

As a sylvicoline species, this flycatcher has a discontinuous range, being definitely known from the Uluguru and the Usambara Mountains, and the Livingstone range. Grote (*loc. cit.*) writes that it probably occurs throughout most of Tanganyika Territory in suitable areas.

The single specimen collected is in molt and therefore in poor condition for measuring.

### Trochocercus cyanomelas bivittatus Reichenow

*Trochocercus bivittatus* Reichenow, Ornith. Centrabl., 1879, p. 108: Muniuni, lower Tana River, Kenya Colony.

1 ♀, Morogoro, Tanganyika Territory, 3 August 1917.
1 ♂, Ngong Forest near Nairobi, Kenya Colony, 11 July 1919.
Juvenal ♂, Uluguru Mountains, Tanganyika Territory, 20 May 1921.

Apparently *T. megalolophus* Swynnerton[2] is a synonym of *T. c. bivittatus*.

[1] Syst. Avium Aethiop., part ii, 1930, p. 430.
[2] Bull. Brit. Orn. Cl., **19**, 1907, p. 109: Jihu district, Gazaland.

This flycatcher has three forms, one of which (*vivax*) has often been considered specifically distinct:

1. *T. c. cyanomelas:* South Africa to Mozambique north to Angoniland and to the Rovuma River. This race differs from the others in having the two innermost remiges white.

2. *T. c. bivittatus:* Gazaland and Nyasaland north through Tanganyika Territory to Kenya Colony east of the Rift Valley, north along the coast to the Tana River and Witu. This form has the white on the wings restricted to the inner greater upper coverts, and to the margins of the outer, upper, greater and middle coverts.

3. *T. c. vivax:* The Katanga and the west central part of Uganda (Mubendi and Lugalambo), two completely separated regions. No white on the wings in adults.

Van Someren[1] writes that Kenyan examples of *bivittatus* have less white on the wings than do others from Tanganyika Territory. This is not upheld by the material I have seen.

The Ngong bird is in molt; the adult from Morogoro is in fresh plumage; the juvenal bird in rather worn condition.

### Terpsiphone viridis suahelicus Reichenow

*Terpsiphone perspicillata suahelica* Reichenow, Werth. Mittl. Hochl. D. O. Afr., 1898, p. 275: Usegua.

Immature ♂, ?, Nairobi, Kenya Colony, 7 October 1915.
1 adult ♂, Nairobi, Kenya Colony, 21 October 1915.
1 adult ♀, Ngong Forest, near Nairobi, Kenya Colony, 18 July 1919.

The two adults have the secondaries and their major upper coverts externally margined with white. No white occurs elsewhere on any of the three (and there is none at all in the immature bird). The adults have white under tail coverts; the younger bird has buffy ones. The latter specimen is in rather worn plumage; the two former are freshly feathered.

This bird occurs throughout Kenya Colony, Uganda, and Tanganyika Territory. The South African race *perspicillata* intergrades with it in southern Tanganyika Territory and occasionally occurs considerably to the north, even to the central part of that country, but such cases are exceptional. A male collected by Loveridge at Bagilo, Uluguru Mountains, has been identified as *perspicillata* by Chapin. I have not seen the bird, but there is no reason to doubt the record,

[1] Nov. Zool., **29**, 1922, p. 103.

the northernmost for the race. Other specimens from the Uluguru Mountains that I have seen are *suahelica*.

Loveridge found a nest containing young on 28 November 1918, in the Uluguru Mountains. The nest, a beautiful cup-shaped affair, covered with lichen, was attached to some epiphytes at a height of about eight feet above a mountain torrent.[1]

### Terpsiphone plumbeiceps Reichenow

*Terpsiphone plumbeiceps* Reichenow, Werth. Mittl. Hochl. D. O. Afr., 1898, p. 275: Angola, Damaraland, Marungu, and Nyasaland.

> "Dar es Salaam and Kilosa. Possibly a bird from Lumbo, Mozambique, shot on 13 August 1918, may belong to this species." (A.L.)

The above is taken from Loveridge's manuscript notes on his collection. I have not seen these birds and am therefore not in a position to discuss them.

### Terpsiphone emini Reichenow

*Terpsiphone emini* Reichenow, Orn. Monatsb., 1893, p. 31: Bukoba.

1 ♂, Chantwara, Bukoba, Tanganyika Territory, 21 December 1922.

This specimen has all the rectrices bright light chestnut, not dark brown, and is therefore clearly *emini* and not *ignea*. I have examined two specimens of the latter from the Budongo Forest, Uganda (Raven coll.) and, except for the median tail feathers, they resemble *emini* so closely that I suspect that the two are identical, the difference being one of age or possibly purely individual. The question is one that I cannot solve with the limited material available, but the presence of these two types in the same region causes me to use a binomial as otherwise (if *emini* and *ignea* were proved to be the same) I would prefer to follow Stresemann[2] and call the present bird a race of *T. rufiventris*.

[1] Proc. Zool. Soc. Lond., 1922, p. 846.
[2] Journ. f. Ornith., 1924, p. 90.

## Family MOTACILLIDAE. Wagtails, Pipits

### Motacilla aguimp vidua Sundenvall

*Motacilla vidua* Sundervall, Oefv. Vet. Ak. Förh., **7**, 1850, p. 128: Type in Stockholm Museum from Syene, that is, Assouan, Upper Egypt.

1 adult ♂, Morogoro, Tanganyika Territory, 4 April 1917.
1 immature, unsexed, Kilosa, Tanganyika Territory, 17 January 1921.
1 ♂, Chantwara, Bukoba, Tanganyika Territory, 5 January 1923.

"Also Tabora and Simba. A very common and widely distributed species." (A.L.)

The immature bird is in molt; the adults are in fine fresh plumage.

The African pied wagtail is distributed throughout the region covered by the present collection.

### Motacilla clara Sharpe

*Motacilla clara* Sharpe, Ibis, 1908, nom. nov. pro *M. longicauda* Rüppell (nec Gmelin), N. Wirbelth., 1840, p. 84, pl. xxix, fig. 2: Simien, Ethiopia.

1 ♂, Nairobi district, Kenya Colony, 9 October 1920.
1 ♂, Uluguru Mountains, Tanganyika Territory, 27 May 1921.

"Also Bagilo, Uluguru Mountains." (A.L.)

The Nairobi bird is molting the tail; the one from the Uluguru Mountains is in fresh plumage.

The present species is found throughout the territory under consideration in this paper, but its range is rather discontinuous as it is chiefly a bird of the highlands, seldom ranging below 5,000 feet. It is a resident throughout its range, but appears to be numerically somewhat uncommon everywhere.

On Mt. Elgon, a nest with eggs has been taken in June.

### Motacilla capensis wellsi Ogilvie-Grant

*Motacilla wellsi* Ogilvie-Grant, Bull. Brit. Orn. Cl., **29**, 1911, p. 30: Kigezi, s.w. Uganda.

1 ♀, Kabura, Mawokota, Uganda, 27 August 1919.

This race of the cape wagtail inhabits the eastern Congo, Ruanda, Uganda, and western Kenya Colony, east to Nairobi and Nyeri, and

also the adjacent parts of northwestern Tanganyika Territory. It differs from typical *capensis* in being somewhat darker above, and is said to have the pectoral band blacker as well, but this seems to be a variable character.

### Budytes flavus flavus (Linnaeus)

*Motacilla flava* Linnaeus, Syst., Nat. 10th ed., 1758, p. 185: Europe; South Sweden (Hartert).

1 ♀, Dar es Salaam, Tanganyika Territory, 15 November 1918.
1 ♂, 1 ♀, Eldoret, Kenya Colony, 8 November 1920.

The blue-headed wagtail is a regular and common winter visitor throughout the region under discussion in this report.

The Dar es Salaam specimen may possibly be the Indian form *beema*, but it is practically impossible to distinguish between the two in winter plumage.

### Budytes flavus luteus (Gmelin)

*Parus luteus* Gmelin, Reise d. Russland, **2**, 1774, p. 110, pl. xx: Astrachan.

1 ♂, Dar es Salaam, Tanganyika Territory, 15 November 1918.
1 ♂, 1 ♀, Chantwara, Bukoba, Tanganyika Territory, 6–10 January 1923.

"Also Kilosa and Ngong." (A.L.)

The eastern yellow wagtail is a common winter visitor in Kenya Colony and Northern Tanganyika Territory, and occurs, but less commonly, south to the Transvaal.

This is the form currently referred to as *campestris* Pallas.

### Anthus nicholsoni neumannianus Collin and Hartert

*Anthus nicholsoni neumannianus* Collin and Hartert, Nov. Zool. **34**, 1927, p. 50: nom. nov. pro. *A. n. longirostris* Neumann, Orn. Monatsb., **13**, 1905, p. 77: Gardula, s. Ethiopia; not *Anthus obscurus longirostris* Brehm, Naumannia, **6**, 1856, p. 342.

1 ♀, Chantwara, Bukoba, Tanganyika Territory, 4 January 1923.

As far as I can discover, this appears to be the first specimen of this form taken in Tanganyika Territory, and constitutes a considerable southwestern extension of the known range of the bird.

The specimen is in worn plumage.

Gyldenstolpe[1] obtained a single specimen of this bird at Lutobo, Kigezi district, Ruanda, which is the nearest record to the present one. But his specimen and the Bukoba bird may be intermediates between *neumannianus* and *nyassae*, as both are short-billed individuals (one of the characters of *nyassae* being its smaller bill.)

### Anthus richardi lacuum Meinertzhagen

*Anthus richardi lacuum* Meinertzhagen, Bull. Brit. Orn. Cl., **41**, 1920, p. 22: Lake Naivasha.

1 ♀, Ngong, near Nairobi, Kenya Colony, 14 July 1919.
2 ♂, Kabale, Ruanda, Uganda, 20 September 1919.
1 ♀, Bungu, Usambara Mountains, Tanganyika Territory, September 1921.
1 ♂, 1 ♀, Mahaka, Tanganyika Territory, 29 March 1922.
1 ♂, 1 ♀, Kome Island, Mwanza, Tanganyika Territory, 21–22 November 1922.
1 ♀, Chantwara, Bukoba, Tanganyika Territory, 29 April 1923.

"Also Samumba and Dar es Salaam." (A.L.)

The Dar es Salaam specimen was supposed to be *raaltcni*, according to Loveridge's notes, but I doubt this very much. The specimen is now in the Manchester Museum.

This race of Richard's pipit occurs throughout the interior of Kenya Colony, Uganda, the eastern Belgian Congo, Ruanda, Urundi, and the northern half of Tanganyika Territory. It is very similar to (perhaps identical with) *raaltenii* of the regions from Nyasaland and Mozambique southwards.

This series shows considerable variation in color, but degree of fading and abrasion appears to be the factor involved. One of the Ruanda birds is in molt.

In Kenya Colony and Uganda the breeding season is in April and May.

### Anthus richardi raaltenii Layard

*Anthus raaltenii* Layard, Bds. S. Afr. 1867, p. 123: Swellendam, ex Lichtenstein, Verz. Vög. Säuget. Kaffernl. 1842, p. 13, (nom. nud.).

1 ♂, 1 ♀, Lumbo, Mozambique, 25 July 1918.

[1] Kungl. Sv. Vet. Akad. Handlngr., 1924, p. 79.

This race averages slightly browner, less grayish fulvous, above than *lacuum* of Kenya Colony and adjacent areas, but the two are very close indeed.

This form occurs from the Cape Province to Bechuanaland, Transvaal, Natal, Zululand, Swaziland, Southern Rhodesia, Nyasaland, and Mozambique. Just where the intergradation with *lacuum* begins is hard to say as there is practically no information available as to the birds of northern Mozambique.

The present two specimens are in fresh plumage.

### Anthus leucophrys goodsoni Meinertzhagen

*Anthus leucophrys goodsoni* Meinertzhagen, Bull. Brit. Orn. Cl., **41**, 1920, p. 33: Nakuru, Kenya Colony.

1 ♂, 1 ♀, Eldoret, Kenya Colony, 9 November 1920.

The present form is the representative in the highlands of central Kenya Colony of the southern African plain-backed pipit.

Sclater[1] writes that the Rift Valley forms the western limit of the range of *goodsoni*, so the present specimens from Eldoret constitute a considerable western extension of range.

Both birds collected are in worn plumage. Their measurements are as follows: wing 97.5–101, tail 70–74; culmen from base 19 mm.

### Anthus trivialis trivialis (Linnaeus)

*Alauda trivialis* Linnaeus, Syst. Nat., 10th ed., 1758, p. 166: Sweden.

1 ♀, Eldoret, Kenya Colony, 6 November 1920.

The tree-pipit is a regular migrant and winter visitor from Europe throughout the territory represented by the present collection.

The single specimen obtained is in fresh plumage, the noteworthy point being the rather early date for such a plumage condition, most individuals being still in worn feathering, or actively molting, as late as the end of November.

[1] Syst. Avium Aethiop., part ii, 1930, p. 344.

### Anthus rufogularis Brehm

*Anthus rufogularis* Brehm, Lehrb. Naturg. eur. Vög., **2**, 1824, p. 963: Nubia, Egypt, and Southern Europe.

1 ♂, 1 ♀, Tindiga, Kilosa, Tanganyika Territory, 2 February 1922.

The red-throated pipit is a regular winter visitor from the north in eastern Africa as far south as central Tanganyika Territory.

The male is in molt; the female still in worn plumage, thereby indicating that the postnuptial molt is not only undergone in the winter quarters, but also not until some time after the birds have arrived there.

### Anthus lineiventris Sundevill

*Anthus lineiventris* Sundevall, Oefv. Vet. Akad. Förh., **7**, 1850, p. 100: Limpopo River; type from Mohapoani, Bechuanaland.

1 ♂, Uluguru Mountains, Tanganyika Territory, 8 May 1921.
1 ♀, Bagilo, Uluguru Mountains, Tanganyika Territory, 29 May 1922.

These two specimens are among the northernmost records for the species, and extend the known range to include the Uluguru Mountains. Previously it was not known from north of the Uhehe district in southwestern Tanganyika Territory, where Fülleborn obtained it, and Iringa where Stierling shot one, except for a single specimen taken by Roehl in the Usambara Mountains, reported by Grote.[1]

It occurs in the bushveld south as far as Zululand and Natal, but is numerous nowhere, and is, consequently, rare in collections.

Reichnow[2] gives the measurements of this pipit as follows: wings 80–85, tail 70; culmen 15–16, tarsus 25–28 mm. The present specimens are very large ones, as they extend the upper limits, as may be seen from their dimensions: male—wing 87, tail 73, culmen 19, tarsus 27; female—wing 85, tail 70, culmen 18.5, tarsus 28 mm.

The female is still partly in molt, the outermost pair of primaries being not quite fully grown, but is otherwise in fresh plumage, as is the male.

Grote notes that the single Usambara specimen has more of a greenish tone than do others from Mozambique and Nyasaland. The present birds have a pronounced greenish wash, but it is doubtful if they

[1] Journ. f. Ornith., 1921, p. 130.
[2] Vög. Afr., 1905, **3**, p. 309.

represent an undescribed race. However, I have no typical material for comparison. They do not differ from a specimen from Nyasaland, which disagrees with Grote's observations.

### Macronyx croceus croceus (Vieillot)

*Alauda crocea* Vieillot, N. Dict. d'Hist. Nat., **1**, 1816, p. 365: Java!; Senegal (Swainson).

1 adult ♂, Nairobi, Kenya Colony, 12 October 1915.
1 adult ♀, Ngong, near Nairobi, Kenya Colony, 29 July 1919.
1 adult ♂, Buddu, Uganda, 28 August 1919.
2 adult ♀, Kabale, Ruanda, Uganda, 20 September 1919.
1 adult ♂, Ndeza, Ankole, Uganda, 9 November 1919.
1 adult ♀, 1 immature ♀, Nairobi District, Kenya Colony, 25-28 August 1920.

"Also Dar es Salaam, Morogoro, Kome Island and Chantwara, Tanganyika Territory, and Lumbo, Mozambique." (A.L.)

The immature bird lacks the black gorget and has the breast slightly suffused with buff, the feathers with dark brown shaft streaks.

This long-claw is widely distributed in the regions represented by the present collection, but being a denizen of the savanna country, does not occur on the higher mountains as they are covered with forest, basally, if not entirely. Thus, Granvik[1] writes that it does not occur above 7,000 feet on Mt. Elgon.

The breeding season in western Kenya Colony and Uganda is chiefly from March to July.

### Macronyx ameliae wintoni Sharpe

*Macronyx wintoni* Sharpe, Ibis, 1891, p. 444: Kavirondo.

1 ♀, Nairobi, Kenya Colony, 12 October 1915.

This specimen is just acquiring the rosy color on the middle of the abdomen, and still completely lacks it on the chin and throat. It is in very fresh plumage, and differs from two somewhat abraded specimens of similar sex from Kamiti in having the black pectoral streaks much finer and fewer in number, and in being more brightly tawny above.

This long-claw is widely distributed in western Kenya Colony and

[1] Journ. f. Ornith., 1923, Sonderheft, p. 201.

Tanganyika Territory to Northern Rhodesia and to the Zambesi valley where it intergrades with typical *ameliae*, the larger, southeast African race. Its center of abundance appears to be the Ikoma and adjacent areas of Tanganyika Territory. Mt. Kenya is the northeastern limit of its range as far as I know.

## Family LANIIDAE. Shrikes

### Lanius collaris humeralis Stanley

*Lanius humeralis* Stanley, in Salt's Voy. Abyss., 1814, Append., p. li (= 51), no. 4: Chelicut, Ethiopia.

1 immature ♂, Parklands, Nairobi, Kenya Colony, 4 September 1915.
1 immature ♀, Ngong Forest, near Nairobi, Kenya Colony, 22 September 1915.
1 adult ♀, Nairobi, Kenya Colony, 20 June 1919.
1 immature ♀, Ngong, near Nairobi, 7 July 1919.
1 adult ♂, Bungu, Usambara Mountains, Tanganyika Territory, September 1921.

"Also Buchosa and Kabare in Bukoba. Though so common in Nairobi, I have never come across this race in the central area of Tanganyika Territory." (A.L.)

Loveridge's note as to the absence (or, at least, the rarity) of this bird in central Tanganyika Territory is of interest in that it shows that *marwitzi* of southwestern Tanganyika Territory from Uhehe to the Nyasa plateau is isolated from *humeralis*, a fact not hitherto clearly demonstrated and one of importance in understanding the local forms of the fiscal shrike.

*L. c. humeralis* ranges throughout eastern Africa from Natal to Eritrea and intergrades with *L. c. smithi* in western Uganda and with *L. c. congicus* in Ruanda.

The young female taken on 7 July at Ngong is only partly grown and could not have been out of the nest more than a couple weeks. The birds nest in practically every month of the year.

Loveridge[1] found a nest on 23 December at Phillipshof, in the Usambara Mountains. The nest, " . . . measured approximately 140 x 110 mm. externally, while the inner cup was 70 mm. in diameter and 45 mm. deep. Neatly and strongly constructed of very fine twigs and lichen outside; lined with grasses and very fine rootlets. One of

[1] Proc. Zool. Soc. Lond., 1928, p. 76.

the two eggs was well incubated, the other apparently addled. One measured 22 x 17 mm., was white in ground-colour and speckled with brown and purplish, but chiefly grouped in a small band around the larger pole."

This shrike, which is very common at Nairobi, breeds throughout the year, for at any season the young birds may be seen on the telegraph wires clamoring for food with quivering wings.[1]

### Lanius cabanisi Hartert

*Lanius cabanisi* Hartert, Nov. Zool., **13**, 1906, p. 404: Mombasa.

1 ♂, 1 ♀, Tindiga, Kilosa, Tanganyika Territory, 26 January 1922.

"Also Bungu, Morogoro, Mkata Plains, and Kilosa. Not a very abundant species as far as my experience goes." (A.L.)

The long-tailed shrike occurs in northeastern Tanganyika Territory (south to Kilosa, Morogoro, and Dar es Salaam) north through Kenya Colony, east of the Rift valley to southern Somaliland, and is one of the birds characteristic of the arid thorn-bush country of eastern Africa that constitutes the southern Somali faunal area.

The two birds collected were a mated pair that had a nest and three eggs. Loveridge has described the nest and eggs[2] as follows, " . . . nest built entirely of rootlets (coarser used for exterior, finer for lining), measured 5 x 4½ inches outside, 4 x 3½ inside, and 1½ inches in depth. Clutch consisted of three fresh eggs measuring 26 x 19 mm. Pale olive ground-colour, with blotches of purplish-brown and brown grouped around the larger pole; a few scattered elsewhere."

### Lanius excubitorius böhmi Reichenow

*Lanius böhmi* Reichenow, Journ. f. Ornith., 1902, p. 258: Bogakatani, Tanganyika Territory.

1 ♂, 1 ♀, Sagayo, Mwanza, Tanganyika Territory, 28 October 1922.

"Also Ankole, Uganda." (A.L.)

This race of the great gray shrike differs from the nominate form of the rest of Uganda and the southern Sudan, and from *intercedens* of Ethiopia and western Kenya Colony, in being darker above with a slight brownish wash on the gray of the upperparts. In size it is inter-

[1] Cf. Proc. Zool. Soc. Lond., 1922, p. 844.
[2] Proc. Zool. Soc. Lond., 1923, p. 904.

mediate between the two. The wing lengths of the present specimens are 125 mm., in the male, and 121 mm., in the female.

*L. e. böhmi* occurs from the northern end of Lake Nyasa north through western Tanganyika Territory to the Kivu district in the eastern Belgian Congo and to Ruanda and southwestern Uganda even to the Buddu Saza, Masaka district, Ankole).

Van Someren[1] records this bird as "*Lanius excubitorius* Rchw.", but this is undoubtedly a slip and was intended to read *L. e. böhmi.* He states that the Ethiopian race *intercedens* (*excubitorius* of his paper) is darker gray on the head and mantle than either the Ugandan *excubitorius* (which he calls *princeps*) or the more southern *böhmi.* In this he is mistaken; I have examined a series of about 50 birds of all three forms, and *böhmi* is certainly the darkest in color.

### Lanius mackinnoni (Sharpe)

*Lanius mackinnoni* Sharpe, Ibis, 1891, pp. 444, 596, pl. xiii: Kikuyu, Kenya Colony.

1 ♀, Masomuntu Mukubwa, Ruanda, Uganda, 26 September 1919.
1 ♂, Rukaya, Mawokota, Uganda, 3 November 1919.

Grote[2] has recently separated the birds of Cameroon and Spanish Guinea under the name *zenkerianus.* This form is said to differ from the eastern *mackinnoni* in having a slightly shorter wing and a noticeably shorter tail. I have examined birds from Cameroon and from Uganda and Kenya Colony and find them identical in every respect. It is true that my series have been small, while Grote has examined no fewer than 33 of *zenkerianus* and 11 of *mackinnoni,* but I cannot help but feel that the deciding factor in the recognition of *zenkerianus* was not its characters, but the distance by which it is isolated from typical *mackinnoni.* If mere distance were of any importance in the production of races, then, to be logical we should be doubly suspicious of a form in which the characters are slight in spite of great geographical isolation.

Gyldenstolpe[3] finds that birds from Central Africa (eastern Belgian Congo), ". . . appear to be slightly larger, the males having wings measuring 85–89 mm. and the females 86–87 mm., against 83 mm. in some males from Cameroon, and 85 mm. in males, 82–85 mm. in

[1] Nov. Zool., **29**, 1922, p. 123.
[2] Ornith. Monatsb., 1924, p. 69.
[3] Kungl. Sv. Vet. Akad. Handlngr., 1924, pp. 112–113.

females from the western parts of Kenya Colony." In other words, Cameroonian and Kenyan birds are more alike than those from the country in between.

This shrike has only recently been recorded from Ruanda, the southernmost point at which it had otherwise been reported to be east of Lake Tanganyika having been Bukoba.[1]

Van Someren[2] writes that in Uganda this shrike is not common. "Young in the first plumage were taken in June. These birds build their nests fairly low down in thorny bushes. They are composed of rootlets and twigs, and lined with fibres. The eggs are buff in ground-colour, spotted and streaked with ash and grey-brown. Two are usually laid." In another paper[3] van Someren notes that this bird is particularly common in the Elgon district. The fact that Granvik[4] never met with it during his extensive field work on Mt. Elgon suggests that this bird may be locally migratory. Its range is as follows: Kenya Colony west of the Rift valley (Kikuyu Escarpment, Nandi, Elgon, Kavirondo, Kaimosi), Uganda, northwestern Tanganyika Territory, Ruanda, the eastern Ituri district of the Belgian Congo, Cameroon, and Spanish Guinea.

### Lanius collurio (Linnaeus)

*Lanius collurio* Linnaeus, Syst. Nat., 10th ed., 1758, p. 94: "Habitat in Europa;" restricted type locality, Sweden (*apud* Hartert, Vög. pal. Fauna, **1**, 1907, p. 439).

1 ♂, 1 ♀, Dar es Salaam, Tanganyika Territory, 24 January 1919.
1 immature ♀, Kilosa, Tanganyika Territory, 15 January 1921.

"Also Morogoro, 28 February 1918; Kimamba, 3 April 1923; Mahaka, 1 April
1922; Kididimo, 17 April 1922." (A.L.)

Van Someren[5] writes of two males from Dar es Salaam (collected by Loveridge) that one, ". . . is very like *L. collurio*, but the forehead is whitish, crown grey, mantle and back dark earth-brown, not reddish. Wing dark, with a large white speculum at base of primaries. Underside pale pinkish. . . Can this be *L. c. kobylini*?" This description also

[1] Cf. Gyldenstolpe, *loc. cit.*
[2] Ibis, 1916, p. 396.
[3] Nov. Zool., **29**, 1922, p. 123.
[4] Journ. f. Ornith., 1923, Sonderheft.
[5] Nov. Zool., **29**, 1922, p. 124.

applies to the present male, but I doubt that *kobylini* is a valid form, and consider such individuals as aberrant or immature birds molting into adult plumage, but not wholly in new feathering. Hartert[1] writes that while there may be a recognizable form in Persia and Transcaucasia (*kobylini*), not a few European specimens match them in color. Later, in a footnote to Kennedy's paper on the Birds of South Russia[2] the same authority comments on a specimen from southern Russia that, ". . . there is a supposed Caucasian race, but its characters and distribution are doubtful; it is supposed to have less rufous on the back and smaller bill, but both characters are quite doubtful and variable. This specimen agrees with some others not from the Caucasus."

Winter birds are pale brown above, while summer specimens are bright rufous. The birds molt during their sojourn in Africa.

### Lanius cristatus isabellinus (Hemprich and Ehrenberg)

*Lanius isabellinus* Hemprich and Ehrenberg, Symb. Phys. fol. e. note 2, 1828: Gumfuda (that is, Kumfuda), Arabia.

One specimen of this shrike was collected by Loveridge at Morogoro, Tanganyika Territory, on 28 March 1918. It was identified by Dr. van Someren, and is now in the Nairobi museum.

### Corvinella melanoleucus aequatorialis (Reichenow)

*Urolestes aequatorialis* Reichenow, Journ. f. Ornith., 1887, p. 65: Gaza Mountains, Tanganyika Territory.

1 ♂, Ushora, Singida, Tanganyika Territory, 29 October 1921.
1 ♀, Sanga, Mwanza, Tanganyika Territory, 16 October 1922.

"Quite a common species at Ushora where it may be seen sitting sentinel-like upon the bushes." (A.L.)

Besides these two specimens, Loveridge collected two others while with the Smithsonian-Chrysler Expedition—an adult male and an immature female taken at Saranda, Dodoma, on 14 July 1926. The young female is molting into adult plumage. The old feathers of the underparts are dark brown tipped with white, the white color being more extensive on the lateral than on the middle part of the abdomen.

[1] Vög. pal. Fauna, **1**, 1907, p. 441.
[2] Ibis, 1921, p. 463.

It seems to me that Urolestes and Corvinella cannot be maintained as distinct genera, and as the latter is the older name I refer the present species to it. Not only are the two groups structurally alike but they are geographically complementary as well, the black "Urolestes" being found from South Africa north to northern Tanganyika Territory, while the brown typical "Corvinella" group occurs from Senegal across the Upper Guinean savannas to the White Nile, Uganda, and extreme western Kenya Colony.

Van Someren[1] lists "*Urolestes torquatus* (Cabanis)", but this is undoubtedly a misprint for *Neolestes torquatus*, and not an attempt to put *torquatus* in Urolestes, as *N. torquatus* is probably not even a true shrike as was pointed out by Chapin[2].

I have seen no birds from southwestern Africa and therefore cannot judge the validity of Neumann's race *damarensis*[3] but *aequatorialis* is well marked off from typical *melanoleucus*, the former being deep black on the sides of the head, the throat and breast, while the latter is brownish black in these areas, and also slightly larger.

Böhm[4] found this shrike breeding in February in Tanganyika Territory, and observed recently fledged young in March.

The present race occurs from Nyasaland north through Tanganyika Territory to Mwanza, the Unyamwezi country, and the Kilimanjaro district, and to southern Kenya Colony (South Kisii area; Mara River; Southern Game Reserve).

### Laniarius barbarus mufumbiri (Ogilvie-Grant)

*Laniarius mufumbiri* Ogilvie-Grant, Bull. Brit. Orn. Cl., **29**, 1911, p. 30: Mufumbiro Volcanoes.

Loveridge obtained a specimen of this rare shrike at Ndeza, Ankole, Uganda, on 9 November 1919, and presented it to the Tring Museum, where it now is. Consequently I have not seen the specimen, but include it in the present report on the assumption that the identification is correct. Dr. Hartert has kindly sent me the locality and date of this specimen as given above.

Van Someren[5] has extended the known range of this bird from the Kivu district through Uganda to Mt. Elgon.

[1] Nov. Zool., **29**, 1922, p. 114.
[2] Amer. Mus. Nov. no. 17, 1921, pp. 6–9.
[3] Journ. f. Ornith., 1900, p. 262: Reheboth, Damaraland.
[4] Journ. f. Ornith., 1883, pp. 188–189.
[5] Nov. Zool., **29**, 1922, pp. 118–119.

Grote[1] has advanced arguments and evidence which indicate quite definitely that *mufumbiri* is a racial form of *L. barbarus,* and not a distinct species.

### Laniarius erythrogaster (Cretzschmar)

*Lanius erythrogaster* Cretzschmar, in Rüppell, Atlas, Vög. 1829, p. 43, pl. xxix: "Kordofan, Sennar."

1 ♂, 1 ♀, Kabura, Mawokota, Uganda, 22 August 1919.
1 ♂, 1 ♀, Sagayo, Mwanza, Tanganyika Territory, 7 November 1922.
"Also Mwanza, Kome Island and Chantwara." (A.L.)

The crimson-breasted bush shrike ranges from Eritrea, the Kassala Province of the Sudan, and Sennar, south through the lower parts of Ethiopia, to Uganda, Kenya Colony, and the northern half of Tanganyika Territory, and west through the Sudan to the French Congo, Lake Chad, and the Adamaua country of northeastern Cameroon. It does not break up into any local forms or subspecies.

It is a bird of the thorn-bush country and is usually found in pairs. The breeding season is in May in Uganda. Van Someren[2] obtained breeding birds in May, juvenal birds in January, and birds in post-juvenal molt in July.

### Laniarius funebris funebris (Hartlaub)

*Dryoscopus funebris* Hartlaub, Proc. Zool. Soc. Lond., 1863, p. 105: Maninga, Unyamwezi country, Tanganyika Territory.

1 ♀, Mdjengo's, Singida, Tanganyika Territory, 7 October 1922.

The typical race of the gray-black shrike ranges through the interior of Tanganyika Territory from the north end of Lake Nyasa north through Kenya Colony to Shoa and the Hawash River in Ethiopia. In northeastern Tanganyika Territory, coastal Kenya Colony, and southern Somaliland it is replaced by the smaller, slightly paler form, *degener.* The nominate race also occurs west of Lake Victoria, through Urundi and Ruanda into Ankola, Uganda.

This is a common species in the dry thorn-bush country that covers so large a part of tropical East Africa, but owing to its shy disposition and secretive habits, it is less easy to procure than its abundance would indicate.

[1] Falco, **26**, 1930, pp. 8–13.
[2] Ibis, 1916, p. 392.

### Laniarius funebris degener Hilgert

*Laniarius funebris degener* Hilgert, Nov. Zool. **18**, 1912, p. 606: Darassum, Gurraland.

1 ♂, 1 ♀, Dodoma, Tanganyika Territory, 6 December 1918.

These two specimens are somewhat intermediate between *funebris* and *degener*, but are nearer the latter, to which race they are here referred. They constitute the southernmost records for the subspecies, the previous southern limits being the Kilimanjaro district. The range of this form extends northward through the Taru desert to Jubaland and Southern Somaliland.

Both specimens are in fairly worn plumage.

### Laniarius fülleborni (Reichenow)

*Dryoscopus fülleborni* Reichenow, Orn. Monatsb., 1900, p. 39: Usafua, north of Lake Nyasa.

1 ♀, Uluguru Mountains, Tanganyika Territory, 17 May 1921.
"When in the Uluguru Mountains in 1926 I heard the call of this bird for the first time, and noticed its distinctness from that of *funebris*." (A.L.)

This specimen, now in the American Museum of Natural History, was disposed of originally under the assumption that it was a duplicate specimen of *funebris*. The identification as *fulleborni* was made by Dr. James P. Chapin. I have not examined the specimen.

This constitutes a new locality record for the species, which was hitherto known only from the highlands around the northern end of Lake Nyasa, and from the Usambara range.

### Laniarius ferrugineus major (Hartlaub)

*Telephonus major* Hartlaub, Rev. Zool., 1848, p. 108: Elmina, Gold Coast.

1 unsexed, Uganda, 1919.
1 ♂, Chantwara, Bukoba, Tanganyika Territory, 26 December 1922.

The distribution of the races of the pied bush shrike in the region covered by the present collection is as follows:

1. Coastal East Africa from Dar es Salaam to Lamu (inland to the Teita and Taveta districts, but not on Mt. Kilimanjaro or Mt. Meru), is inhabited by a race with no white band on the wings—*sublacteur*.

2. Tanganyika Territory and Kenya Colony west of the coastal belt and east of the Rift Valley (and Mts. Kilimanjaro and Meru) is the home of a form in which a white band is present on the wings, but is restricted to the middle upper coverts—*ambiguus*.

3. Western Kenya Colony (west of the Rift Valley) and Uganda and extreme northwestern Tanganyika Territory west to Cameroon, Nigeria, and Sierra Leone is inhabited by a form in which the white wing band extends from the middle upper coverts to the outer edges of some of the inner secondaries; the bird is large in size also; wings 100–110 mm.—*major*.

4. Extreme southern Tanganyika Territory; (the Rovuma Valley), Nyasaland, the northern half or more of Mozambique, and eastern Rhodesia is occupied by a race which closely resembles *major*, but is smaller, wings about 90 mm.—*mossambicus*.

All these races are similar in habit; all are bush dwellers, all have loud, clear, bell-like notes, all combine the frugivorous diet of the true bush shrikes with the carnivorous appetite of the typical laniine shrikes.

The unsexed specimen of *major* is in molt. The December male is in fairly fresh plumage. The breeding season in Uganda is in May and July according to the observations of van Someren[1].

### Laniarius ferrugineus mossambicus (Reichenow)

*Dryoscopus major mossambicus* Reichenow, Journ. f. Ornith., 1880, p. 141: Mozambique.

1 ♂, 1 ♀, Lumbo, Mozambique, 10 July 1918.
"Very abundant at Lumbo." (A.L.)

These two specimens are in fresh plumage and have a decided rosy hue on the underparts. The male has a wing length of 90 mm. thereby agreeing very closely with the dimensions given by several authors for *mossambicus*.

In its general habits this bird probably agrees with the other races, but it also seems to inhabit wetter places than do the other geographic forms. Thus, Boyd Alexander[2] found it commonly in the reed beds along the Zambesi. In Gazaland, eastern Southern Rhodesia, Swynnerton[3] found the birds breeding during November. Loveridge[4]

[1] Ibis, 1916, p. 391.
[2] Ibis, 1889, p. 580.
[3] Ibid., 1908, p. 53.
[4] Proc. Zool. Soc. Lond., 1922, p. 844.

writing of this bird under the name *sublacteus*, records a nest with one egg at Lumbo on 28 October 1918.

### Laniarius ferrugineus ambiguus Madarasz

*Laniarius aethiopicus ambiguus* Madarasz, Mus. Nat. Hung., **2**, 1904, p. 205: Kilimanjaro.

1 ♀, Ngong Forest near Nairobi, Kenya Colony, 25 July 1919.
1 ♀, Tumutumu, Kenya Colony, October 1920.

The bird from Ngong Forest is a young specimen molting into adult plumage. It has the lateral breast feathers as well as some of those of the sides and flanks and a streak down the middle of the abdomen barred with dusky grayish, the bars narrow and widely spaced. The white middle upper wing coverts are subterminally barred narrowly with black. Both this specimen and the adult have the outer web of the outermost rectrix on either side tipped with whitish, whereas most specimens of this species have no white on the tail feathers. The underparts are suffused with pinkish in the adult, white with no pinkish tinge in the young.

### Laniarius ferrugineus sublacteus (Cassin)

*Dryoscopus sublacteus* Cassin, Proc. Acad. Nat. Sci. Phil., 1851, p. 246: East Africa.

1 ♀, Mombasa, Kenya Colony, 1 July 1919.
1 ♂, Kilosa, Tanganyika Territory, 4 January 1921.
1 ♀, Kilosa, Tanganyika Territory, 17 January 1921.

This bird has been recorded from Kilimanjaro by several collectors, but in each case the specimens have proven to be, on reinspection, not *sublacteus*, but *ambiguus*. Van Someren[1] writes that both of these forms occur together in the Kilimanjaro region, and consequently considers *sublacteus* specifically distinct. However, this is not the case; the bird of the lowlands, the eastern Serengeti Plains, Lake Jipe, etc., is the bird of the low coastal belt, the form with completely black wings—*sublacteus*, while the bird of the higher mountain masses is the race of the inland plateau—*ambiguus*.

In his manuscript notes, Loveridge records *sublacteus* from Bungu, in the Usambara Mountains, southeast of Kilimanjaro, and Grote[2]

[1] Nov. Zool., **29**, 1922, p. 118.
[2] Journ. f. Ornith., 1921, p. 127.

also lists it from the western slopes of the Usambara range. This form is also known from Nyange, in the Uluguru Mountains.[1]

The Mombasa specimen and one from Kilosa are in molt. The other is in worn plumage. The last mentioned has a white terminal spot on the outer web of the outermost rectrix on each side.

### Laniarius luhderi luhderi (Reichenow)

*Dryoscopus lühderi* Reichenow, Journ. f. Ornith., 1874, p. 101: Cameroon.

2 ♂, Singo, Ruanda, Uganda, 25 September 1919.

As van Someren has pointed out,[2] there are two geographic races of Lühder's bush shrike, the typical race ranging from Cameroon and Gaboon east to the eastern Belgian Congo, Ruanda, and the Mpanga forest in Toro, western Uganda; and a smaller, usually paler race, *castaneiceps*, found in the Elgon, north Kavirondo, and Nandi countries in western Kenya Colony. The wings measure 85–95 mm., in the nominate form; 80–85 mm., in the eastern subspecies. I am not satisfied that the latter is necessarily paler although I have not seen much material. Van Someren states that when his twelve skins of *castaneiceps* are, " . . . compared with typical *L. lühderi* from Camaroon, it is at once obvious that the Elgon and Nandi birds are smaller and paler . . . " A female from Kaimosi in the U. S. National Museum is small (wing 80.5 mm.) but is not any paler either on the crown or the throat and breast than the present two males from Ruanda. The latter two have wing lengths of 86 and 89 mm., respectively, and are thus referred to typical *luhderi*. Van Someren[3] notes that a large series collected by Grauer in the Kivu-Tanganyika district, as well as two from Lukiga (i.e. Rukiga) and Kigezi (van Someren coll.) are *L. lühderi lühderi*.

It should be noted that Granvik[4] was unable to find any difference between his single specimen from Mt. Elgon and a series from Cameroon and the Lake Tanganyika-Kivu area. His bird (male) has a wing length of 88 mm.

The two birds collected by Loveridge differ from each other in that one has the feathers of the tibiae pure white, while the other has them very pale buffy.

[1] Cf. Friedmann, Ibis, 1928, p. 87.
[2] Nov. Zool., **29**, 1922, p. 118.
[3] *loc. cit.*
[4] Journ. f. Ornith., 1923, Sonderheft, p. 138.

### Dryoscopus cubla hamatus Hartlaub

*Dryoscopus hamatus* Hartlaub, Proc. Zool. Soc. Lond., 1863, p. 106: Kazeh, Unyamwesi district, Tanganyika Territory.

1 ♂, Morogoro, Tanganyika Territory, 24 July 1917.
1 ♂, 1 ♀, Mombasa, Kenya Colony, 22 May 1918.
1 ♂, 1 ♀, Dar es Salaam, Tanganyika Territory, 13 June 1918.
1 ♂, 1 ♀, Lumbo, Mozambique, 10 July 1918.
1 ♂, 1 ♀, Ngong Forest, near Nairobi, Kenya Colony, 14 July 1919.
1 ♂, 1 ♀, Bungu, Usambara Mountains Tanganyika Territory, September 1921.

" Also Uluguru Mountains and Kilosa, Tanganyika Territory." (A.L.)

*D. c. suahelicus* Neumann is a synonym.

The tropical race of the puff-backed shrike occurs throughout Mozambique, Tanganyika Territory, and southern Kenya Colony (north to Mt. Kenya and the Tana River). It varies in size, but while the smallest birds are from the coastal regions, the largest specimens from the interior are only slightly larger than the biggest ones from the coast. Consequently, it is not possible to separate them, as van Someren[1] indicates might be done.

The breeding season in southern Kenya Colony is in December and January. The courtship display consists of fluffing out and erecting the long, silky rump feathers to form a ball-like puff. Both sexes indulge in this display, but the male does so to a greater extent than the female.

### Dryoscopus cubla affinis (Gray) x D. cubla hamatus Hartlaub

1 ♀ ?, Uluguru Mountains, Tanganyika Territory, 11 May 1921.

This peculiar specimen has been the cause of considerable worry and its identification as a hybrid between *affinis* and *hamatus* is not necessarily correct, but all the evidence, both that afforded by the specimen itself, and also that gleaned by the elimination of one form after another on geographic grounds, points to this conclusion. In its general coloration, it resembles the adult female of *hamatus*, but has the lower throat, breast, and upper abdomen washed with tawny buff, and has the light margins of the wing feathers and scapulars tawny instead of white. The implication of *affinis* blood in this bird lies in the

[1] Nov. Zool., **29**, 1922, p. 120.

fact that this species occasionally has the sides of the throat suffused with buff as in the figure of "*Laniarius orientalis* Swainson" (a synonym of *affinis*) on plate v of Finsch and Hartlaub's "Die Vögel Ost-Afrikas," 1870.

In his revision of the African shrikes, Neumann[1] writes that the relationships of the forms of Dryoscopus are rendered somewhat obscure by the production of hybrids, especially in the coastal region of East Africa and in Cameroon. The present bird appears to be such a case. Another well known one is that of "*Dryoscopus salimae*" which is considered a hybrid between *affinis* and *hamatus*, and which resembles the present bird but has the light edgings much less extensive on the wings, and white, not buffy, in color, and has the underparts white.

Van Someren[2] has recently produced evidence bearing on the very close relationship between *affinis* and *hamatus*, which is of interest in the present connection.

### Dryoscopus gambensis erwini Sassi

*Dryoscopus gambensis erwini* Sassi, Orn. Monatsb., 1923, p. 109: forest west of Lake Tanganyika, Belgian Congo.

1 "♂" (= ♀), Ruanda, Uganda, 28 September 1919.

Soft parts: iris red; bill black, lower mandible gray; feet gray.

This specimen was sexed as a male by Loveridge's native collector, but it is unquestionably a female. It is fully adult and cannot be assumed to be an immature male (in which the plumage resembles that of the adult female).

Sassi[3] records *erwini* from the forest region west of Lake Tanganyika, Kisenye, Kasindi, and Rutchuru in the Eastern Ituri district of the Belgian Congo and from the Bukoba area on the Tanganyika-Uganda boundary. Gyldenstolpe[4] records it from the Kivu district. The above specimen appears to be the first one taken in British Ruanda, but the range of this subspecies probably extends through southwestern Ankole and western Toro as well, for a specimen from Ruwenzori in the U. S. National Museum is clearly referable to this race. Of all the forms of *Dryoscopus gambensis*, the present one is the smallest,

[1] Journ. f. Ornith., 1899, pp. 409–410.
[2] Nov. Zool., **37**, 1932, p. 309.
[3] *loc. cit.*
[4] Kungl. Sv. Vet. Akad. Handlngr., 1924, p. 118.

wings 80–88 mm., in the males, 80–83 mm. in the females, as against the following in the nominate form which it most resembles in color—wing 92–96 mm. in the males, 89–96 mm., in the females.

This is another of the species in which eye color is of subspecific value. Chapin[1] has recently discussed this character in the mousebird, *Colius striatus*. In *Dryoscopus gambensis erwini* the iris is red or orange red; in *D. g. nyanzae* it is yellowish; in *D. g. malzacii* it is orange; in *D. g. gambensis* it is red.

### Dryoscopus bocagei jacksoni Sharpe

*Dryoscopus jacksoni* Sharpe, Bull. Brit. Orn. Cl., **11**, 1901, p. 57: Mt. Elgon.

1 ♂, Kabura, Mawokota, Uganda, 21 August 1919.

This species is found in the Nandi country, extreme western Kenya Colony, and in Uganda. In its structural characters it serves to connect the genera *Dryoscopus* and *Chlorophoneus*, and van Someren[2] finds the juvenal birds present features suggestive of their relationship to the latter genus, having the upper back, wings and tail greenish in color. According to Sclater[3] Chapin has suggested placing *bocagei* in *Chlorophoneus*.

The single specimen collected agrees with another from Mabira. It is in fairly fresh plumage and has a wing length of 78 mm.

### Pomatorhynchus australis littoralis (van Someren)

*Harpolestes australis littoralis* van Someren, Bull. Brit. Orn. Cl., **41**, 1921, p. 102: Changamwe, Kenya Colony.

1 ♀, Dar es Salaam, Tanganyika Territory, 29 June 1918.
1 ♂, Kilosa, Tanganyika Territory, 1 January 1921.

"Also Lumbo, Mozambique." (A.L.)

The Kilosa bird is the farthest inland record of this race in Tanganyika Territory. It may be slightly intermediate between *littoralis* and *congener*, but I have seen no specimens of the latter. I have not seen any birds from Lumbo, Mozambique, and am not at all certain that *littoralis* occurs there. Grote[4] writes that *minor* reaches the coastal

[1] Journ. f. Ornith., 1929, Ergänzungsband ii, Festschrift Ernst Hartert, pp. 174–183.
[2] Ibis, 1916, pp. 392–393.
[3] Syst. Avium Aethiop., part ii, 1930, p. 624.
[4] Journ. f. Ornith., 1912, p. 128.

districts at Mikindani but that the form of Cape Delgado is *congener*. It is therefore not impossible that the Lumbo birds are also *congener*.

*P. a. littoralis* is the smallest of the East African forms of this shrike, the wings being under 75 mm. in length. It is also whiter underneath than the inland form *minor* or than the race of Uganda and the lakes district—*emini*. It is restricted to the coastal country of the northern half of Tanganyika Territory and southern Kenya Colony north to the Tana River.

The female from Dar es Salaam is a young bird with a brownish bill.

### Pomatorhynchus australis minor (Reichenow)

*Telephonus minor* Reichenow, Journ. f. Ornith., 1887, p. 64: Kagehi, southeast corner of Lake Victoria.

1 ♂, Ngong Forest near Nairobi, Kenya Colony, 23 July 1919.

This is the form of the inland regions of East Africa from North-central Tanganyika Territory (Mwanza, Unyamwesi, Usambara, and Kilimanjaro districts) north to the Northern Guaso Nyiro River in Kenya Colony. All the forms of this shrike are denizens of the thorny scrub of the bushveld and Acacia savannas. The present race breeds from May to July and from September to November.

### Pomatorhynchus australis emini (Reichenow)

*Telephonus australis emini* Reichenow, Orn. Monatsb., 1893, p. 60: Bukoba, n. w. Tanganyika Territory.

1 ♂, Kabale, Ruanda, Uganda, 20 September 1919.

Soft parts: iris brown, bill black, feet gray.

This form is only doubtfully distinct from *minor* from which it differs in having the underparts, especially the sides and flanks more ashy gray, less fulvous in color. In size the two subspecies are alike. This race ranges from the Bahr el Ghazal province of the Sudan through Uganda to extreme western Kenya Colony, northwestern Tanganyika Territory, Ruanda, Urundi, and to Beni in the eastern Belgian Congo. In the Kivu region it is replaced by *frater* (of which *kiwuensis* Reichenow is a synonym).

### Pomatorhynchus senegalus erythropterus (Shaw)

*Lanius erythropterus* Shaw, Genl. Zool., **7**, 1809, p. 301: "Senegal" (= S. Africa).

1 juvenal ♂, Buchosa, Bukoba, Tanganyika Territory, 20 November 1922.
1 ♀, Karum, Mwanza, Tanganyika Territory, 30 November 1922.

This form of the black-capped bush-shrike ranges from South Africa north through Rhodesia, Nyasaland, and the interior of Mozambique, Tanganyika Territory, Kenya Colony and Uganda. It is the darkest of the three races represented in the regions covered by the present report.

The young bird is a juvenal about two-thirds grown. The adult is in worn plumage.

Inasmuch as I can find no constant differences between South and East African birds, I consider *armenus* Oberholser (*terra typica* Taveta, near Mt. Kilimanjaro) a synonym of *erythropterus*.

### Pomatorhynchus senegalus orientalis Cabanis

*Pomatorhynchus orientalis* Cabanis, Decken, Reise, **3**, 1869, p. 27: Mombasa;

1 ♂, 1 ♀, Morogoro, Tanganyika Territory, 16 July 1917.

"Also Mombasa; Uluguru Mountains, and Kilosa." (A.L.)

This race is more whitish below and more sandy on the upper back than the inland form, *erythropterus*. In his manuscript notes Loveridge lists a specimen from Tabora as *orientalis*. I have not seen the bird in question, but I doubt if the pale, coastal form occurs farther west than Kilosa. The Tabora bird is probably *erythropterus*.

This race inhabits the same country as *P. australis littoralis* and varies in the same way from inland birds as does *littoralis*, both being pale forms. *P. s. orientalis* inhabits the coastlands from the Pangani River to Lamu.

On 5 January 1923 Loveridge found a nest with two eggs at Kilosa. The nest was seven feet up in a miombo tree.[1]

At Morogoro this bush shrike was found nesting on 26 and 29 March 1917. "In both instances only two eggs were laid. The nests were very shallow, composed of a base of small twigs and rootlets with

[1] Cf. Loveridge, Proc. Zool. Soc. Lond., 1923, p. 905.

a lining of much finer roots. They were both in bushes, one being at a height of 4, the other 5, feet from the ground."[1] Another nest was found in the same locality on 4 April.

### Pomatorhynchus senegalus mozambicus (van Someren)

*Harpolestes senegalus mozambicus* van Someren, Bull. Brit. Orn. Cl., **41**, 1921, p. 103: Lumbo, Mozambique.

1 ♂, 1 ♀, Lumbo, Mozambique, 10 July 1918.

These two specimens are topotypes and were collected by Loveridge at the same time as the type. Hartert[2] writes that the type of *mozambicus* was collected, " . . . by Dr. van Someren's experienced collectors," but all the birds from Lumbo in van Someren's collection were taken by Loveridge.

This form, known only from the type locality, is very pale; the upper back is noticeably lighter than in *orientalis*, the rump is gray, not brownish gray, and the underparts purer white.

The present two specimens are in fresh plumage. Their dimensions are as follows: male—wing 85, tail 92, culmen 23.5 mm.; female—wing 82, tail 95, culmen 23 mm.

### Antichromus minutus (Hartlaub)

*Telephonus minutus* Hartlaub, Proc. Zool. Soc. Lond., 1858, p. 292: Ashanti.

1 ♂, Ekagango, Ankole, Uganda, 17 October 1919.
1 ♂, Katabasungu, Buddu, Uganda, 2 November 1919.

This shrike appears to fill a wide variety of ecological habitats, and is consequently common in most parts of its range. Most authors comment on the fact that it is a denizen of the Acacia savannas and the thorny scrub country, but Stoneham[3] found it so commonly in swampy places and in the elephant grass that he refers to it as the "black-saddled swamp-shrike."

This species occurs from the Gold Coast and northern Cameroon east through the northern Belgian Congo to Uganda, Kenya Colony, the Nile Valley of the Sudan, and to western Ethiopia. South of the great equatorial forest it is replaced by another species, *anchietae* which ranges from northern Angola to the Katanga, Nyasaland,

[1] Proc. Zool. Soc. Lond., 1922, p. 844.
[2] Nov. Zool., **34**, 1928, p. 211.
[3] Ibis, 1928, p. 269.

Gazaland, and Tanganyika Territory north to the coastal belt of southern Kenya Colony where it overlaps with *minutus*. *A. anchietae* lacks the black scapular bands found in *A. minutus*.

The breeding season of the present shrike in Uganda is in March and in September. In western Kenya Colony it has been found nesting in June.

### Antichromus anchietae reichenowi (Neumann)

*Telephonus reichenowi* Neumann, Journ. f. Ornith., 1900, p. 120: Tanganyika Territory.

1 adult ♂, 1 immature ♀, Uluguru Mountains, Tanganyika Territory, 7 June 1921.

"Also Bagilo and Morogoro." (A.L.)

Bannerman[1] writes that he finds that the characters of *reichenowi* do not hold true, thereby agreeing with the observations of Ogilvie-Grant and of Sclater. However, the characters he refers to are those of lighter coloring and smaller size, while no mention is made of the fact, pointed out by Neumann[2] that the black crown patch is posteriorly bordered with white in *reichenowi* while in *anchietae*, the black is in direct contact with the rufous of the nape. I find that no only does this difference hold but that Tanganyikan birds are slightly smaller than Angolan specimens (to judge the latter from published data). The point that is not clear is where one race ends and the other begins. I have seen no Nyasaland or Katanga birds and have to leave the matter open for the present.

The young bird has a light brown bill and has the top of the head brown streaked with black, the black being present as shaft stripes. Some of the postero-lateral crown feathers are edged with whitish. The feathers of the upper back are rich rufous as in the adult, but have black median streaks.

Grote[3] has recorded *reichenowi* from Mlalo in the Usambara Mountains, but he either considers it a race of *minutus* and not of *anchietae*, or he considers all three conspecific. I prefer to recognize two species for the present as the ranges of the two appear to overlap near Mombasa.

The adult bird is molting the rectrices and remiges and the feathers of the upper back.

[1] Rev. Zool. Africaine, **9**, 1921, p. 358.
[2] *loc. cit.*
[3] Journ. f. Ornith., 1921, p. 127.

### Chlorophoneus sulfureopectus suahelicus (Neumann)

*Cosmophoneus sulphureopectus suahelicus* Neumann, Journ. f. Ornith., 1899, p. 395: Kakoma, south of Tabora, Tanganyika Territory.

1 adult, ♀, Morogoro, Tanganyika Territory, 23 July 1917.
1 adult ♂, Lumbo, Mozambique, 25 July 1918.
1 adult ♂, Kilosa, Tanganyika Territory, 24 December 1920.
1 juvenal ♂, Kilosa, Tanganyika Territory, 26 January 1921.

This race of the orange-breasted bush-shrike occurs from central Mozambique north through Tanganyika Territory to eastern Kenya Colony, north along the coast to southern Italian Somaliland. In Uganda it is replaced by a paler-breasted form, *modestus*.

The young bird has the entire underparts pale yellowish-white narrowly barred with dark gray, the bars narrowest on the chin and throat, broader and more widely spaced on the breast and upper abdomen, and entirely lacking on the middle of the abdomen. The top of the head is dark gray (not blue-gray as in adults), barred with whitish; the cheeks and sides of the head like the crown; the back and rump are greenish gray barred with blackish and with white; the wings and tail are as in the adults. This bird has the remiges and rectrices only partly grown, and could not have been out of the nest for more than two or three weeks, which would place the nestling season in central Tanganyika Territory as in December and early January.

### Chlorophoneus rubiginosus münzeri Reichenow

*Chlorophoneus münzneri* Reichenow, Orn. Monatsb., **23**, 1915, p. 91: Sanyi, Mahenge, Tanganyika Territory.

1 adult ♀, 1 immature ♀, Uluguru Mountains, Tanganyika Territory, 13–18 May 1921.

The adult is remarkable in that it has the under tail coverts very light yellow, whereas in the original description of this form, these feathers are said to be greenish yellow.

The immature plumage appears to be undescribed. It is similar to that of *bertrandi* but has a slight cinnamon tawny wash on the breast.

In a previous paper[1] I write that *münzneri* and *bertrandi*, " . . . are very closely related, perhaps only doubtfully separable . . . " This is misleading and should be corrected. At the time both forms were

[1] Ibis, 1928, pp. 86–87.

new to my experience, but they are easily told at a glance. *C. r. bertrandi* has a white loreal patch, no solid black band on the forehead, and dusky olive gray under tail coverts, while *C. r. münzneri* has black lores, a black frontal band, and light greenish yellow under tail coverts. The latter also is paler on the breast and abdomen.

The geographic variations of *C. rubiginosus* are of unusual interest because the peripheral races are so distinct that they would unquestionably pass as species were the intermediates unknown. The typical race occurs in the forest areas of South Africa from George in the Cape Province, eastwards to Pondoland and Natal, north to the Transvaal (Waterberg and Zoutspansberg areas) and Zululand. It has white lores and a white superciliary stripe over the black patch surrounding the eye and the cheeks and auriculars. *C. r. bertrandi* replaces *rubiginosus* north of the Limpopo River and ranges north to Gazaland and Nyasaland. It lacks the white superciliary stripe but has the black ocular band more or less continuous across the forehead between the white line at the base of the bill and gray of the crown. In central Tanganyika Territory this, in turn, gives way to *münzneri* which differs from it in the way intimated above. In the forests west of Lake Albert, Belgian Congo, the race *rudolfi* occurs, which has the lores, sides of the head, and auriculars ashy gray instead of black; while in south-central Uganda another form, *andaryae* is found. This is said to have the whole upper surface, cheeks, sides of the neck, and the middle pair of rectrices dark leaden gray; the lores and superciliary stripe white; the entire underparts pure white except for a bright buffy wash on the breast. Only the type specimen is known.

Nothing appears to have been recorded of the habits of this bush-shrike, but it probably acts, nests, etc., in a way quite similar to the better known typical form in South Africa.

Sclater[1] writes that *bertrandi* occurs north to the Uluguru Mountains, while *münzeri* is found only in Mahenge. This is wrong; the latter is the race occurring in the Uluguru range.

### Chlorophoneus nigrifrons nigrifrons (Reichenow)

*Laniarius nigrifrons* Reichenow, Orn. Monatsb., 1896, p. 95: Kilimanjaro.

1 ♂, 1 ♀, Uluguru Mountains, Tanganyika Territory, 8 May 1921.
1 juvenal ♂, Bagilo, Uluguru Mountains, Tanganyika Territory, 5 May 1922.

"Also Bungu, Usambara Mountains." (A.L.)

[1] Syst. Avium Aethiop., part ii, 1930, pp. 632–633.

Van Someren[1] suggests that *C. abbotti* and *C. manningi* may be synonyms of this form. I find that the latter is a valid race of *abbotti*, which is a distinct, although closely allied species. I have examined the type of *abbotti* and find it to represent a definite form different from *nigrifrons*. If the two did not occur together, it would be natural to consider them only subspecifically distinct, but as they are coincidental in range, this is not possible. Sjöstedt[2] collected both species and found the differences to be constant.

*Chlorophoneus miniatus* Madarasz[3] is a synonym of *abbotti*, not of *nigrifrons*. As far as known, typical *abbotti* is wholly confined to Kilimanjaro, while *nigrifrons* occurs in the forested highlands of Kenya Colony and Tanganyika Territory west to the eastern Belgian Congo.

Sjöstedt[4] has figured and described what he assumes to be the young of *C. nigrifrons* but I am quite certain that his identification in this case is wrong, and that the juvenal bird in question is *C. abbotti*. The present juvenal *nigrifrons* has the underparts olive greenish yellow faintly barred, and thereby agrees with the young birds in van Someren's collection. The bird described and figured by Sjöstedt, however, is lighter below and has an orange wash on the breast, which latter character especially indicates that it is really *abbotti*.

The figure of the adult *nigrifrons* given by Reichenow[5] has the crown, nape, and upper back too pale, and the green on the flanks too extensive.

There are supposed to be three geographic forms of *C. nigrifrons*, but I have not enough material to judge them. However, as pointed out in another paper,[6] this bird appears to vary but little in any one locality. Seven adults from the Uluguru Mountains are very similar to each other. Therefore, it follows that even slight geographic variations might be recognizable due to the limited extent of individual differences. These races are as follows:

1. *C. n. nigrifrons:* Kilimanjaro to the Uluguru Mountains, north and west in the forested highlands of Kenya Colony to Nairobi, Mt. Kenya, Molo, Escarpment, Elgeyu, and Mt. Elgon. Granvik[7] records *C. abbotti* from Londiani, but his bird is *nigrifrons*, as he says that it, " . . . agrees almost entirely with the description . . . " of *abbotti*,

[1] Nov. Zool., **29**, 1922, p. 115.
[2] Kilimandjaro-Meru Exp., Vögel, 1908, pp. 113–114.
[3] Ann. Mus. Hung., **2**, 1904, p. 205.
[4] *loc. cit.*, pp. 113–114, pl. ii, fig. 3.
[5] Vög. Afr., Atlas, 1905, pl. ix, fig. 3.
[6] Friedmann, Ibis, 1928, p. 86.
[7] Journ. f. Ornith, 1923, Sonderheft, p. 135.

" . . . except that the colour of the underparts and of all the under tail coverts is uniform yellow."

2. *C. n. manningi:* The Nyasa-Tanganyika plateau, west to the Katanga and Rhodesia. Similar to *nigrifrons* but has the breast more orange in color.

3. *C. n. conceptus:* the forests west of Lake Tanganyika, eastern Belgian Congo. Like *nigrifrons*, but the gray of the crown, nape, and upper back paler; females without the black frontal, loreal, and auricular band. I have not seen any material of this form and am a little suspicious of the last named character, since it reads like a description of a young bird. Furthermore, even females of the typical race have no black behind the eyes as do the males.

Van Someren[1] has suggested that *abbotti* might be the adult male of *nigrifrons*. It therefore is necessary to point out (and this has been done before by others) that the only difference between the sexes of *nigrifrons* is that the males are slightly brighter below than the females, but have the breast and throat yellowish with a tawny tinge, never bright orange as in *abbotti*.

Bangs[2] has recently described *C. abbotti sandgroundi* from Mt. Silinda, Gazaland, and has listed the races of *C. nigrifrons* and *C. abbotti*. With his conclusions I agree entirely.

### Malaconotus poliocephalus blanchoti Stephens

*Malaconotus blanchoti* Stephens, in continuation of Shaw's Genl. Zool., **13**, pt. 2, Feb. 1826, p. 161: South Africa (cf. Neumann, Orn. Monatsb., 1903, p. 87).

1 adult ♂, 1 adult ♀, Dar es Salaam, Tanganyika Territory, 13 June 1918.
1 immature ♂, Kilosa, Tanganyika Territory, 7 January 1921.
1 immature ♀, Kilosa, Tanganyika Territory, 27 January 1921.

"Also Morogoro and Lumbo. These birds usually go in pairs; their deep bell-like call is one of the most delightful sounds of early morning." (A.L.)

The adult female has the breast darker than in the male, and may be an intermediate between *blanchoti* and *approximans*.

The immature male has the entire underparts pale whitish yellow without any golden tinge and without the orange-tawny color on the breast, and has the crown, nape, and occiput much paler and grayer,

[1] *loc. cit.*
[2] Proc. N. Eng. Zool. Cl., **12**, 1931, pp. 70–71.

less bluish slate, than the adults, and has brownish edges on the feathers of these parts. It is a juvenal bird with the wings and tail only about four-fifths grown. The young female is in post-juvenal molt and is more like the adults, having some of the bright yellow and the orange tawny on the underparts. Inasmuch as the remiges and rectrices in this bird are new, it appears that the postjuvenal molt is a complete one.

This race of the gray-headed bush-shrike occurs from Dar es Salaam and the Pangani River south to Pondoland, and west to the interior of Tanganyika Territory, Nyasaland, eastern Rhodesia, and the Transvaal. In Gazaland the breeding season is in November, while at Kilosa, central Tanganyika Territory, Loveridge found a nest with three eggs on 16 December[1] and at Morogoro he discovered another on 2 November.

### Malaconotus poliocephalus approximans (Cabanis)

*Archolestes approximans* Cabanis, in von der Decken, Reise., **3**, 1869, p. 27: Dalaon River, Usambara, Tanganyika Territory.

1 adult ♂, Mombasa, Kenya Colony, 20 May 1918.

"Also occurs at Dar es Salaam where it meets with *M. p. blanchoti.*" (A.L.)

This form differs from *blanchoti* in having a darker chestnut pectoral band. It ranges from northeastern Tanganyika Territory to the Tana River, inland through the Taru desert to the plains east of Kilimanjaro and to southern Ukamba. In northern Kenya Colony and in Ethiopia it is replaced by a similar, but larger race, *schoanus* Neumann.

The present specimen is large for its race, having a wing length of 110 mm., this same figure being the maximum for *approximans*.

### Nicator chloris gularis Finsch and Hartlaub

*Nicator gularis* Finsch and Hartlaub, Vog. Ost.-Afr., 1870, p. 360: Tete, Zambesi.

1 ♀, Morogoro, Tanganyika Territory, 24 July 1917.
1 ♂, Morogoro, Tanganyika Territory, 15 October 1917.

"Also Uluguru Mountains, Ilonga, Kilosa, and Dodoma." (A.L.)

The female is much smaller than the male. The latter has a wing

[1] Proc. Zool. Soc. Lond., 1923, p. 905.

length of 117 mm., as against 94 mm. in the former. The latter is molting the rectrices.

This form of *Nicator chloris* occurs from lower Jubaland south through eastern Kenya Colony and Tanganyika Territory to Mozambique and to Zululand. Although chiefly a bird of the thorny tangles of the more wooded parts of the coastal plain, this bird has been recorded as far inland as Chiromo in Nyasaland, and in Gazaland. In Uganda it is replaced by the typical, western race.

The nesting season in Mozambique is in December, as Sheppard found a nest with three eggs, near Beira on 17 December. Boyd Alexander obtained a male in breeding condition on 23 December on the Zambesi.

## Family PRIONOPIDAE. Helmet-shrikes

### Prionops poliocephala poliocephala (Stanley)

*Lanius poliocephalus* Stanley, Salt Voy. Abyss., 1814, App. p. 1 (= 50): "Abyssinia," *errore*, Mozambique, (Neumann, Journ. f. Ornith., 1905, pp. 216–217).

1 ♂, Morogoro, Tanganyika Territory, 8 May 1917.
1 ♀, Morogoro, Tanganyika Territory, 24 May 1917.

"Also common at Kilosa, Kongwa, and Mpinga." (A.L.)

Neumann[1] has shown that Stanley's description of *poliocephala* does not apply to any form found in northeastern Africa, and notes that nearly a quarter of the birds Salt brought back from Africa were obtained, not in Eritrea, but in Mozambique where he made a rather prolonged stay. Neumann is undoubtedly correct in his interpretation, and the present name must be used for the species otherwise known as *talacoma*. However, the latter name must stand for the southwestern race of this helmet shrike according to Roberts.[2]

The present two specimens are not fully adult as they have lighter crowns than a series of adults examined.

This bird is fairly generally distributed throughout the region covered by this report, usually occurring in small groups, never very abundant. At Kakoma, Tanganyika Territory, Böhm found it breeding in March.

[1] Journ. f. Ornith., 1905, pp. 216–217.
[2] Ann. Trans. Mus., **10**, 1924, p. 86.

Shelley[1] states that this species has never been found to nest south of the Zambesi. This is not so, as it is a fairly common nesting bird in the Transvaal.

### Sigmodus retzii tricolor (Gray)

*Prionops tricolor* G. R. Gray, Proc. Zool. Soc. Lond., 1864, p. 45: type in Brit. Mus. from Tete, Zambesi.

Immature ♂, Kilosa, Tanganyika Territory, 26 February 1921.

"Also Saranda. Common in open bush country or thickets." (A.L.)

Reichenow[2] states that a young bird from Morogoro has white tips to the greater secondary coverts, forming a broad white wing band, while two specimens (age not given, but apparently adult) from Lewa and Tanga have only a faintly marked white band on the primaries. The present specimen has no white on the greater coverts and has a broad white band on the inner webs of the primaries, the band visible only from the under side of the wings.

Zedlitz[3] gives the range of *tricolor* as Southern Tanganyika Territory, but it really occurs as far north as the Pangani River, Kilosa, Morogoro and Saranda.

### Sigmodus retzii graculinus (Cabinis)

*Prionops graculinus* Cabanis, Journ. f. Ornith., 1868, p. 412: Mombasa (cf. Finsch and Cabanis, Vög. O-Afr., 1870, p. 368).

1 ♀, Ngong Forest, near Nairobi, Kenya Colony, 16 July 1919.
1 ♀, Ngong Forest, near Nairobi, Kenya Colony, 1 September 1920.

Van Someren[4] writes that some adults show traces of white on the inner webs of the primaries. These two do not.

This race of the red-billed helmet-shrike inhabits southern and central Kenya Colony and northeastern Tanganyika Territory, where it is restricted to the forested areas. It is common in the places where it is found.

Both specimens are in fresh plumage; in fact, the female is not quite finished with the wing molt.

[1] Bds. Afr. **5**, 1912, p. 478.
[2] Vög. Afr., **2**, 1903, p. 536.
[3] Journ. f. Ornith., 1915, p. 53.
[4] Nov. Zool., **29**, 1922, p. 109.

KNESTROMETOPON SCOPIFRONS SCOPIFRONS (Peters)

*Sigmodus scopifrons* Peters, Journ. f. Ornith., 1854, p. 422: Mozambique.

1 ♂, 1 ♀, Bungu, Usambara Mountains, Tanganyika Territory, September 1921.

*Sigmodus scopifrons keniensis* van Someren[1] is a synonym, as has been shown by Sclater.[2] Van Someren[3] has recently defended *keniensis* and recognizes both *keniensis* and *kirki* and not the nominate form as the races occurring in Kenya Colony. However he does not advance any decisive proof of his contention.

Neumann[4] proposed the genus *Knestrometopon* for this species, then placed in *Sigmodus*, on the basis of the plush-like mass of feathers on the forehead, a character found in no other shrike-like bird, and duplicated only in some of the birds of paradise, starlings, etc. On comparing *scopifrons* with *Sigmodus reizii*, *caniceps* and *rufiventris*, I agree that the first named is generically distinct from the last three.

This peculiar helmet-shrike has two subspecies, the typical form ranging from Beira, Mozambique, northward in the highlands of the interior of Tanganyika Territory (Mamboia and the Usambara Mountains) to southern, central and north-central Kenya Colony; and *kirki*, which inhabits the coastal district of East Africa from the Pangani River in Tanganyika Territory to the mouth of the Tana River in Kenya Colony. This race is very distinct as it has the chestnut plush-like forehead patch separated from the black of the crown by a fairly broad, distinct grayish-white band. It has been figured by Shelley[5] under the name *Sigmodus scopifrons*.

The two specimens are alike in plumage and in size. Their dimensions are: wing 103 in each, tail 80.5 in the female (male unfortunately lacks the tail), culmen 20 in the male, 21 mm., in the female.

In the Beira district Sheppard found this bird breeding, and discovered a nest on 14 November. "It was saddled on a fork towards the extremity of a bough about 15 feet from the ground in a tree in open wood and closely resembled the nest of *Dryoscopus cubla*. It contained three young birds just hatched. These were being fed by three old birds, one of which was shot and proved to be a young male."[6]

*Phaidrometopon* Roverts[7] is antedated by *Knestrometopon* Neumann.

[1] Bull. Brit. Orn. Cl., **43**, 1923 p. 80: Meru, northeast Mt. Kenya.
[2] Ibid., **44**, 1924, p. 92.
[3] Nov. Zool. **37**, 1932, p. 303.
[4] Journ. f. Ornith., 1920, p. 77.
[5] Proc. Zool. Soc. Lond., 1881, pl. lii.
[6] Cf. Shelley, Bds. Afr., **5**, 1912, p. 469.
[7] Ann. Trans. Mus., **8**, 1922, p. 248.

### Eurocephalus rüppelli rüppelli Bonaparte

*Eurocephalus rüppelli* Bonaparte, Rev. et Mag. Zool., 1853, p. 440: White Nile (*vide* Zedlitz, Journ. f. Ornith., 1915, p. 47).

"One from West Kenya thorn-bush steppe in Nairobi Museum." (A.L.)

This specimen I have not seen, but judging by the locality whence it came there can be no doubt as to its subspecific identification.

### Eurocephalus rüppelli böhmi Zedlitz

*Eurocephalus anguitimens böhmi* Zedlitz, Ornith. Monatsb., **21**, 1913, p. 58: Langenburg, s. w. Tanganyika Territory.

1 ♂, 1 ♀, Dodoma, Tanganyika Territory, 20 December 1918.

"Also Kongwa. Large flocks are by no means uncommon in the thorn-bush steppe around Dodoma." (A.L.)

These two specimens differ in that the female is very much paler on the interscapular region than the male. However, even the latter, which is in fresher plumage than the former, is somewhat lighter than specimens of typical *rüppelli*, and I therefore identify both as *böhmi*. They are the northernmost examples yet obtained, and slightly extend the known range of the subspecies in a northeastward direction, the previous northern limit being Ugogo.

The male bird is molting in the wings and tail, the female is very much abraded but not beginning to molt. Both are fairly large, the wing length of the male being 134, of the female 131 mm.

At Kongwa, on 25 April 1917, Loveridge found one of these birds building a nest on the tip of a branch of a mimosa thorn tree.

### Nilaus nigritemporalis Reichenow

*Nilaus nigritemporalis* Reichenow, Journ. f. Ornith., 1892, pp. 36, 218: Ngoma, Tanganyika Territory.

1 immature ♂, Morogoro, Tanganyika Territory, 2 October 1917.
1 ♂, Kinyambwa, Dodoma, Tanganyika Territory, 13 April 1922.

This little shrike ranges from the Unyamwezi and Ugogo districts of Tanganyika Territory south to Beira in Mozambique and to the Zambesi Valley in eastern Rhodesia. It occurs in Nyasaland as well, but appears to be rather scarce everywhere. Its breeding habits have not been recorded as far as I know.

The adult is molting the remiges and rectrices, making measurements worthless. The young bird may readily be told from the young of the other East African forms of *Nilaus* by the fact that it has black longitudinal streaks on the throat and breast. Sclater[1] states that the "very young birds have no rufous on the sides of the body," in which case the present bird is in second (?) plumage as it not only has the black streaks on the throat and breast, but has a broad band of pale cinnamon-rufous on the sides and flanks.

## Family STURNIDAE. Starlings

### Cinnyricinclus leucogaster lauragrayae Bowen

*Cinnyricinclus leucogaster lauragrayae* Bowen, Proc. Acad. Nat. Sci. Phila., **82**, 1930, p. 166: Meru, Kenya Colony.

1 ♂, 1 ♀, Morogoro, Tanganyika Territory, 30 November 1918.

"Also Nairobi; Bungu; Dar es Salaam; and Chantwara. A common species in the maiombo bush country; generally in flocks." (A.L.)

This bird is widely distributed throughout the areas covered by the present collection.

### Lamprocolius chalybeus chalybeus (Hemprich and Ehrenberg)

*Lamprotornis chalybeus* Hemprich and Ehrenberg, Symb. Phys., fol. y, 1828, pl. x: Ambukol, Dongola.

1 adult ♂, 1 immature ♂, Ngong Forest, Kenya Colony, 10 July 1919.
1 adult ♂, Mbugwe, Buddu, Uganda, 31 August 1919.
1 adult ♀, Eldoret, Kenya Colony, 6 November 1920.

The bird from Mbugwe is somewhat intermediate between *chalybeus* and *sycobius*, but is nearer the former. It is darker, more violet below, than most specimens of this form.

This form is common and widely distributed throughout most of Kenya Colony. It is scarcer in Uganda.

[1] In Shelley's Birds of Afr., **5**, 1912, p. 461.

### Lamprocolius chalybeus sycobius Hartlaub

*Lamprocolius sycobius* Hartlaub, Journ. f. Ornith., 1859, p. 19: Tete, Zambesi.

1 ♂, Morogoro, Tanganyika Territory, 19 May 1917.
1 ♀, Sanga, Ankole, Uganda, 24 October 1919.
1 ♂, 1 ♀, Kilosa, Tanganyika Territory, 15 July 1921.
1 ♂, 1 ♀, Bungu, Usambara Mountains, Tanganyika Territory, September, 1921.
1 ♂, Saranda, near Kilimatinde, Tanganyika Territory, 6 March 1922.

The birds from the Usambara Mountains are close to typical *chalybeus* in size; those from Kilosa are the smallest, the Sanga and Saranda specimens being between the two extremes.

This race occurs throughout eastern Africa from southwestern Uganda and southeastern Kenya Colony south to the northeastern part of the Transvaal. It is the commonest of the glossy starlings throughout its range.

### Lamprocolius chloropterus elisabeth Stresemann

*Lamprocolius chloropterus elisabeth* Stresemann, Orn. Monatsb., **32**, 1924, p, 173: South Ufipa.

1 immature ♂, Kilosa, Tanganyika Territory, 15 July 1921.

This specimen is in an early stage of the postjuvenal molt. The underparts are rusty brownish red as in the description given by Stresemann[1] but a few glossy adult feathers are sprouting here and there on the breast and abdomen. The molt is more advanced on the upperparts than on the central surface.

The range of this bird comprises all of Tanganyika Territory and south to the Zambesi Valley.

### Lamprocolius splendidus splendidus (Vieillot)

*Turdus splendidus* Vieillot, Enc. Meth., **2**, 1822, p. 653: Malimbe, Portuguese Congo.

1 ♂, 1 ♀, Chantwara, Bukoba, Tanganyika Territory, 26 December 1922.

These two specimens are in fresh plumage.

This race occurs throughout the northern part of the territories

[1] Journ. f. Ornith., 1925, p. 159.

represented by the present collection. In southwestern Tanganyika Territory (north along the eastern shore of Lake Tanganyika to Ujiji) it is replaced by *bailundensis* Neumann, a less purplish form.

### Lamprocolius corruscus mandanus van Someren

*Lamprocolius corruscus mandanus* van Someren, Bull. Brit. Orn. Cl., **41**, 1921, p. 124: Manda Id., Kenya Colony.

1 ♂, 1 ♀, Bungu, Usambara Mountains, Tanganyika Territory, September 1921.

The male is a subadult bird; the female is fully adult. Both are in fresh plumage.

This starling is a bird of coastal Tanganyika Territory, north in Kenya Colony to Lamu Island, and south in Mozambique to the Zambesi. It occurs on Zanzibar but not on Pemba, where it is replaced by a violet-headed form, *vaughani*.

### Lamprotornis purpuropterus purpuropterus Rüppell

*Lamprotornis purpuropterus* Rüppell, Syst. Uebers., 1845, pp. 64, 75, pl. xxv; Shoa.

1 ♂, 1 ♀, Lasicalet, Buddu, Uganda, 28 August 1919.

The long-tailed glossy starling occurs in the Ufipa district in Tanganyika Territory, Kenya Colony, Uganda, the southern Sudan, and Ethiopia.

The male specimen is in molt.

The species has been found breeding in April and May in Uganda.

### Cosmopsaris unicolor Shelley

*Cosmopsaris unicolor* Shelley, Ibis, 1881, p. 116: Ugogo.

1 ♂ 1 ♀, Mahaka, Dodoma, Tanganyika Territory, 27 March 1922. "Also Kongwa, Mpinga, Konzigwe, Dodoma, Saranda, and common throughout the Dodoma district." (A.L.)

The ashy long-tailed starling inhabits central and southern Tanganyika Territory from Mwanza and Ugogo to the northern end of Lake Nyasa.

Schuster[1] found this species quite commonly in the Ugogo, Usagara,

[1] Journ. f. Ornith., 1926, p. 721.

Uhehe, and Ubena areas. The birds are said to go about in small flocks, just as does the brilliantly colored species farther north (*C. regius*).

The dimensions of the two specimens are as follows: male—wing 117.5, tail 153, culmen from base 23 mm.; female—wing 126, tail 171, culmen from base 24 mm.

### Onychognathus walleri walleri (Shelley)

*Amydrus walleri* Shelley, Ibis, 1880, p. 335, pl. viii: Usambara Mountains.

2 ♀ ♀, Bagilo, Uluguru Mountains, Tanganyika Territory, 15–16 May 1922

This starling occurs in the Usambara and Uluguru Mountains and on Kilimanjaro. In the highlands of western Kenya Colony it is replaced by a closely allied form *elgonensis*.

I consider *nyasae* and *keniensis* as synonyms of *walleri*, though Bangs and Loveridge[1] recognize the former on geographical grounds. Their material consisting of six males from the Uzungwe, Ukinga and Rungwe Mountains in southwestern Tanganyiki.

Both the present specimens are in fresh plumage; they have wing lengths of 126 and 129 mm., respectively.

### Onychognathus morio shelleyi (Hartert)

*Amydrus morio shelleyi* Hartert, Kat. Vogelsam, Mus. Senck., 1891, p. 75, note: Ugogo.

1 ♂, 1 ♀, Uluguru Mountains, Tanganyika Territory, 8 May 1921.

> "Also Fort Hall, Bungu, and Morogoro. A single specimen from the last locality was probably a straggler from the large flocks met with higher up the mountain." (A.L.)

The East African red-winged starling occurs throughout most of Kenya Colony, Tanganyika Territory, and Nyasaland, and northern Mozambique.

The wing length of the male is 165, of the female 150 mm.

Schuster[2] records this starling from the Uluguru, Nguru, and Utchungwe (i. e. Uzungwe) Mountains. He writes that the species seldom occurs below 3,300 feet, but that he saw it at 2,000 feet near Morogoro.

[1] Bull. Mus. Comp. Zoöl., **75**, 1933, p. 208.
[2] Journ. f. Ornith., 1926, p. 721.

### Onychognathus tenuirostris (Rüppell)

*Lamprotornis tenuirostris* Rüppell, N. Wirbelth., Vög., 1836, p. 26, pl. x, fig. 1: Abyssinia.

"One was shot with a flock of *O. m. shelleyi* on the slopes of the Uluguru Mountains just above Morogoro." (A.L.)

This specimen, which, unfortunately has not been available for study, is the second one known from Tanganyika Territory. Previously the only record for that country was a bird collected by Fülleborn between Tandala and Bulongwa, in the Ukinga highlands. The Uluguru Mountains form a connecting link in the known range of this bird, the nearest record to the north being from Nairobi.

### Stilbopsar kenricki (Shelley)

*Poeoptera kenricki* Shelley, Bull. Brit. Orn. Cl., **3**, 1894, p. 42: Usambara, Tanganyika Territory.

1 ♂, 1 ♀, Bungu, Usambara Mountains, Tanganyika Territory, September 1921.

"Also Bagilo." (A.L.)

Kenrick's starling occurs on the Uluguru and the Usambara Mountains, Mt. Kilimanjaro, and reappears in the forested area around Mt. Kenya and Meru.

Roehl collected a series on the Usambara range, and in reporting on them, Grote[1] noted that the female has less brownish sheen on the back than the male, but often has more bluish. The present female has no brownish, or bluish sheen; neither does the male. The female is slatey grayish on the head, interscapulars, and rump.

### Spreo hildebrandti (Cabanis)

*Notauges hildebrandti* Cabanis, Journ. f. Ornith., 1878, p. 233, pl. iii: Ukamba.

1 ♂, 1 ♀, Mbonoa, Singida, Tanganyika Territory, 29 September 1922.

"Common at this spot, but I have not met with it elsewhere." (A.L.)

This starling occurs in northern Tanganyika Territory and southern Kenya Colony.

The present specimens are in fresh, adult plumage.

[1]Journ. f. Ornith., 1921, pp. 127–128.

### Spreo superbus (Rüppell)

*Lamprocolius superbus* Rüppell, Syst. Uebers., 1845, pp. 65, 75, pl. xxvi: Shoa.

1 ♂, 1 ♀, Dodoma, Tanganyika Territory, 4 December 1918.
"Also Gulwe and Suna." (A.L.)

The superb starling is a common bird throughout Tanganyika Territory and Kenya Colony and ranges into Somaliland, Ethiopia, and the Sudan.

The female is in a molting condition; the male is not.

### Buphagus erythrorynchus caffer Grote

*Buphagus erythrorhynchus caffer* Grote, Orn. Monatsb., **35**, 1927, p. 13: Selala River, Transvaal.

1 ♂, 1 ♀, Dodoma, Tanganyika Territory, 5 December 1918.
"Also Ngong, Bungu, Mpinga, and Kome Island." (A.L.)

These two specimens are large (wings 120 and 121 mm., respectively) and are clearly referable to the southern race *caffer*.

Both specimens are in molting condition.

## Family NECTARINIIDAE. Sunbirds

### Nectarinia famosa aeneigularis Sharpe

*Nectarinia aeneigularis* Sharpe, Ibis, 1891, p. 444: Sotik, Kenya Colony.

1 adult ♂, 1 immature ♂, Eldoret, Kenya Colony, 9 September 1920.

The immature bird is in molt.

This species seems to be almost unique among sunbirds in having two molts a year, the bright green plumage being worn only in the breeding season.

This race occurs in the highlands of Kenya Colony from Eldoret and Mau south to Kilimanjaro, the Usambara and the Uluguru Mountains. Grote[1] records birds from the Usambara Mountains as *cupreonitens*, but this is a mistake. *N. f. cuprconitens* is a bird of the Ethiopian highlands.

Schuster[2] found the present bird at altitudes of about 5,000 feet in the Uluguru range.

[1] Journ. f. Ornith., 1921, p. 134.
[2] ibid., 1926, p. 735.

### Nectarinia kilimensis kilimensis Shelley

*Nectarinia kilimensis* Shelley, Proc. Zool. Soc. Lond., 1884, p. 555: Mt. Kilimanjaro, about 5,000 feet.

1 ♂, West Kenya, Kenya Colony, 23 November 1915.
2 ♀, Eldoret, Kenya Colony, 9 November 1920.

"Also Tumutumu, Nairobi, Ngong, Kasoka, and Rukaya." (A.L.)

This race of the bronzy sunbird occurs from Mt. Kilimanjaro through Kenya Colony to Mt. Elgon and eastern Uganda. In western Uganda and the eastern Congo it is replaced by a more purplish form, *filiola*, and in southwestern Tanganyika Territory and Nyasaland by the smaller race, *arturi*.

The present specimens are in rather abraded plumage.

### Nectarinia erythrocerca erythrocerca Hartlaub

*Nectarinia erythrocerca* Hartlaub, Syst. Orn. Westafr., 1857, p. 270: no locality; White Nile, south of 8° N. Lat. (see Heuglin, S B. Akad. Wiss. Wien, **19**, 1856, p. 272).

1 ♂, Kabura, Mawokota, Uganda, 28 August 1919.

The red-chested sunbird occurs throughout Uganda and adjacent parts of the Sudan, Belgian Congo, and Kenya Colony. It is common in the open scrub country and breeds during June and July and December and January.

The single specimen collected is in good, fairly fresh plumage.

### Nectarinia melanogastra melanogastra Fischer and Reichenow

*Nectarinia melanogastra* Fischer and Reichenow, Journ. f. Ornith., 1884, p. 181: Nguruman, Natron Lake.

1 ♂, Dodoma, Tanganyika Territory, 22 December 1918.
1 ♂, Mbonoa, Singida, Tanganyika Territory, 29 September 1922.

These two specimens constitute the southernmost records for the present bird. Sclater[1] gives a brief statement of range which stops in a southern direction with the Tanganyikan-Kenyan border.

The Singida bird is subadult and is molting into adult plumage.

[1] Syst. Avium Aethiop., part ii, 1930, p. 685.

It has the metallic feathers of the throat darker, more bluish, less golden, green than in the Dodoma adult. The latter has a slightly longer bill than the former.

### Drepanorhynchus reichenowi Fischer

*Drepanorhynchus reichenowi* Fischer, Journ. f. Ornith., 1884, p. 56: Lake Naivasha, Kenya Colony.

1 ♀, Ngong Forest, Kenya Colony, 23 July 1919.

The single specimen collected is in very abraded plumage. This bird is numerous in the scrub country of the semi-highlands of southern Kenya Colony from the Kilimanjaro district to Mt. Elgon and Mt. Uraguess, and occurs in Uganda west to Ankole.

### Cinnyris cupreus chalceus (Hartlaub)

*Nectarinia chalcea* Hartlaub, Ibis, 1862, pp. 337, 341: Cambanbe, Quanza River, Angola.

1 ♂, Chantwara, Bukoba, Tanganyika Territory, 26 December 1922.
1 ♀, Kabare, Bukoba, Tanganyika Territory, 15 January 1923.

I agree with Gyldenstolpe[1] and not with Bannerman[2] or Sclater[3] in considering the birds of the Central African lakes region as *chalceus* and not *cypreus*. The former race is larger than the latter and is more southern in its distribution, occurring from Angola, Northern Rhodesia, and Nyasaland, to the eastern Belgian Congo and Uganda.

The female is in worn plumage; the male is fairly freshly feathered.

### Cinnyris bifasciatus microrhynchus Shelley

*Cinnyris microrhynchus* Shelley, Monogr, Nectarin., 1876, p. 219, pl. lxvii: type in Brit. Mus. from Dar es Salaam.

1 ♂, Mombasa, Kenya Colony, 22 May 1918.
1 ♀, Dar es Salaam, Tanganyika Territory, 12 July 1918.
1 ♀, Lumbo, Mozambique, 20 July 1918.
1 ♀, Nairobi, Kenya Colony, 20 June 1919.

"Also Bungu, Morogoro, and Kilosa." (A.L.)

[1] Kungl. Sv. Vet. Akad. Handlngr., 1924, pp. 87–88.
[2] Rev. Zool. Afr., **9**, 1922, p. 327.
[3] Syst. Avium Aethiop., part ii, 1930, pp. 686–687.

The female from Nairobi is identified as *microrhynchus* on the strength of a pencil note on the label by either Hartert or Goodson. Nairobi is a long distance west of the range of this race; west even of that of *tsavoensis* which occupies the Teita and Ukamba districts. The specimen is brighter yellow below, and slightly less yellow, more brownish, above, than the female from Dar es Salaam, but the two are very close.

The range of *microrhynchus* (not counting the Nairobi record which is open to doubt) is the coastal belt of eastern Africa from southern Kenya Colony to Beira, thence inland to eastern Mashonaland.

The Lumbo bird is apparently immature. It has much more dusky brownish gray on the throat and breast than either of the adult females.

### Cinnyris mariquensis suahelicus Reichenow

*Cinnyris suahelica* Reichenow, Journ. f. Ornith., 1891, p. 161: Tabora district, Tanganyika Territory.

1 ♂, Kome Island, Mwanza, Tanganyika Territory, 22 November 1922.

This specimen is subadult and is molting into adult plumage.

This form of the Mariqua sunbird occurs throughout the interior of East Africa from central Kenya Colony and eastern Uganda through Tanganyika Territory to the north end of Lake Nyasa.

The breeding season is in June and July.

### Cinnyris talatala A. Smith

*Cinnyris talatala* A. Smith, Rep. Expl. C. Afr., 1836, p. 53: country between Orange River and Kurrichane.

1 ♂, Dar es Salaam, Tanganyika Territory, 12 July 1918.

Sclater[1] has found that *C. leucogaster* cannot be used as the name of this sunbird, as it is a synonym of *C. v. venustus*. This was first pointed out by Hellmayr.[2]

I have no typical material of *talatala* for comparison and so cannot form an opinion as to the validity of *C. t. lumbo* van Someren, which is said to differ in having the rump and upper tail coverts more greenish,

[1] Ibis, 1930, p. 679.
[2] Nov. Zool., **23**, 1916, pp. 108–109.

less bluish violet, than in typical *talatala*. I follow Sclater in using a binomial for this bird.

The single specimen obtained is in fairly fresh plumage but has lost a good many feathers, apparently on the skinning table.

### Cinnyris venustus igneiventris Reichenow

*Cinnyris igneiventris* Reichenow, Orn. Monatsb., **7**, p. 171: Karagwe, Uganda.

1 ♂, Singo, Ruanda, Uganda, 25 September 1919.

The present race is the most deeply colored below of all the forms of its species. The upper abdomen is bright orange, instead of yellow or yellowish with an orange tinge. The form inhabits Uganda and adjacent parts of the eastern Belgian Congo, Ruanda, and Urundi.

The present specimen is in fresh plumage.

### Cinnyris venustus falkensteini Fischer and Reichenow

*Cinnyris falkensteini* Fischer and Reichenow, Journ. f. Ornith., 1884, p. 56: Lake Naivasha.

1 ♂, 1 ♀, Morogoro, Tanganyika Territory, 2 March 1917.
1 ♂, Uluguru Mountains, Tanganyika Territory, 15 May 1921.
"Also Nairobi, Dodoma, Dar es Salaam, and Lumbo." (A.L.)

These specimens are in fresh plumage.

This bird is a common form throughout Tanganyika Territory, coastal Mozambique, and the interior of the southern half of Kenya Colony. In Nyasaland it is replaced by another form, *niassae*, and in Uganda by *igneiventris*, and in the Turkana area by *sukensis*.

### Cinnyris mediocris mediocris Shelley

*Cinnyris mediocris* Shelley, Proc. Zool. Soc. Lond., 1885, p. 228: Mt. Kilimanjaro, 12,000 feet.

1 ♂, Tumutumu, Kenya Colony, 15 October 1920.

The Kenya race of the double-banded sunbird is a bird of the mountains from Elgon and Uraguess to Usambara and Kilimanjaro.

In southwestern Tanganyika Territory and Nyasaland it is replaced by *fülleborni*. The so-called races *keniensis* and *garguensis* (types of both examined) are not distinct from *mediocris*.

This specimen is in somewhat worn plumage.

### Cinnyris reichenowi reichenowi Sharpe

*Cinnyris reichenowi* Sharpe, Ibis, 1891, p. 444: Sotik.

1 ♂, Uganda, 10 November 1919.
1 ♂, Tumutumu, Kenya Colony, 13 October 1920.

If *kikuyuensis* Mearns be found to be recognizable (which is possible), the Tumutumu bird would have to be referred to it. The Uganda specimen is a little less bluish above than the Kenyan one, but is in fresher plumage than the latter. The former is also larger than the latter.

### Cinnyris loveridgei Hartert

*Cinnyris loveridgei* Hartert, Bull. Brit. Orn. Cl., **43**, 1922, p. 49: Uluguru Mountains, Tanganyika Territory.

2 ♂, 3 ♀, Bagilo, Uluguru Mountains, Tanganyika Territory, 10 May–9 June 1922.

These specimens are all topotypes of this distinct form. Sclater[1] lists *loveridgei* as a race of *C. regius*, but I doubt if this expresses its true status as well as a binomial name.

Loveridge[2] has already published on some of these specimens and there is nothing new to add here.

### Chalcomitra amethystina kirkii (Shelley)

*Cinnyris kirkii* Shelley, Monogr. Nectarin., 1876, p. 273, pl. lxxxv: "Zambesi distr.", probably Shupanga.

1 ♂, Dar es Salaam, Tanganyika Territory, 15 June 1918.
1 ♀, Dar es Salaam, Tanganyika Territory, 7 February 1919.

"Also Bungu." (A.L.)

This race occurs along the coast of eastern Africa from the Zambesi mouth to the Pangani River, and inland to Mashonaland, Nyasaland,

[1] Syst. Avium Aethiop., part ii, 1930, p. 698.
[2] Proc. Zool. Soc. Lond., 1923, pp. 900–901.

and southwestern Tanganyika Territory. The crown patch of the male has a yellowish green sheen; the allied races *kalckreuthi* and *doggetti* have a bluish-green sheen.

### Chalcomitra amethystina doggetti (Sharpe)

*Cinyris doggetti* Sharpe, Ibis, 1902, p. 116: Ravine, Kenya Colony.

1 ♂, Nairobi, Kenya Colony, 31 July 1919.

This specimen has the crown patch unusually blue even for *doggetti* and is therefore a little misleading in that it makes the difference between this form and *kalckreuthi* and *kirkii* seem greater than it really is. The bird is in fine, fresh plumage.

Van Someren[1] reports this form as common in the Nairobi area. He obtained young birds there in May and June.

### Chalcomitra senegalensis aequatorialis (Reichenow)

*Cinnyris aequatorialis* Reichenow, Orn. Monatsb., **7**, 1899, p. 171: Bukoba.

1 ♂, 1 ♀, Kabura, Mawokota, Uganda, 26 August 1919.
"Also Chantwara." (A.L.)

The present form of the scarlet-breasted sunbird is a common bird in western Kenya Colony and in Uganda. It nests from April to July and from October to January.

The two specimens obtained are in rather worn plumage.

### Chalcomitra senegalensis lamperti (Reichenow)

*Cinnyris senegalensis lamperti* Reichenow, Journ. f. Ornith., 1897, p. 196: Moshi, Tanganyika Territory.

1 ♀, Nairobi district, Kenya Colony, 6 September 1920.

This race is not too well differentiated from *aequatorialis*, but the females of the *lamperti* are more grayish, less yellowish below.

### Chalcomitra senegalensis inaestimata (Hartert)

*Cinnyris gutturalis inaestimata* Hartert, in Ansorge's "Under the African Sun," 1899, App. p. 351: "East Africa;" type in the Tring Museum from Dar es Salaam.

[1] Ibis, 1916, p. 443.

1 adult ♂, 1 immature ♂, Morogoro, Tanganyika Territory, 3 July 1917.
1 adult ♀, Mombasa, Kenya Colony, 31 May 1918.
3 immature ♂, 2 adult ♀, Dar es Salaam, Tanganyika Territory, 7 June 1918.
1 immature ♂, Morogoro, Tanganyika Territory, 7 August 1918.

"Also Bungu, Kilosa, and Lumbo." (A.L.)

The adults are in fresh plumage; the young ones are in molt.

Loveridge[1] found this bird nesting at Kilosa and Ilonga on 15 January, 12 February, 19 May, 18 July and 27 December.

### Chalcomitra veroxii fischeri (Reichenow)

*Cinnyris fischeri* Reichenow, Journ. f. Ornith., 1880, p. 142: Mozambique.

1 ♂, Mombasa, Kenya Colony, 23 May 1918.

This sunbird is restricted to the coastal belt of Eastern Africa from Southern Mozambique north to Lamu in Kenya Colony.

The present specimen is in slightly worn plumage.

### Cyanomitra verticalis viridisplendens (Reichenow)

*Cinnyris viridispoendens* Reichenow, Journ. f. Ornith., 1892, pp. 54, 132: Bukoba, Tanganyika Territory.

1 ♂, Ruanda, Uganda, 28 September 1919.
1 ♀, Tumutumu, Kenya Colony, 15 October 1920.

"Also Kabare, Bukoba." (A.L.)

The green-headed sunbird is a forest inhabiting species. It ranges from Ruwenzori and the Kivu district east through Ruanda and Uganda to the wooded areas of western Kenya Colony to Mt. Kenya and to Tumutumu.

Both the present specimens are in fairly fresh plumage, the male especially so.

Granvik[2] has recorded considerable color variation in his birds from Londiani and Mt. Elgon. The present male has the throat and breast greenish with a slight bluish tinge.

[1] Proc. Zool. Soc. Lond., 1923, p. 900.
[2] Journ. f. Ornith., 1923, Sonderheft, p. 216.

### Cyanomitra olivacea neglecta Neumann

*Cyanomitra obscura neglecta* Neumann, Journ. f. Ornith., 1900, p. 297: Kibwezi, Ukamba, Kenya Colony.

1 ♀, Uluguru Mountains, Tanganyika Territory, 24 May 1921.
1 ♀, Bungu, Usambara Mountains, Tanganyika Territory, September 1921.
1 ♂, Bagilo, Uluguru Mountains, Tanganyika Territory, 10 May 1922.

The birds from the Uluguru Mountains are slightly larger and greener above than the Usambara specimen, and therefore the former approach *ragazzi* to some extent. In fact, in a report on a collection of birds from these two mountain ranges[1] the Uluguru birds were called *ragazzi*. A subsequent study of more ample material destroys the definiteness of this conclusion but unfortunately leaves the whole problem of the distribution and characters of *neglecta* and *ragazzi* in a rather unsettled state.

These three birds are in fairly fresh plumage.

### Cyanomitra olivacea changamwensis (Mearns)

*Cinnyris changamwensis* Mearns, Smiths. Misc. Coll., **56**, no. 14, 1910, p. 4: Changamwe, Kenya Colony.

1 ♂, Mombasa, Kenya Colony, 25 May 1918.

This specimen is very large for *changamwensis*, having a wing length of 61 mm., thereby agreeing with the figures presented by Granvik[2] who does not consider this form recognizable. All the races of the olive sunbird are rather poorly differentiated, but on the whole, in series, *changamwensis* is as good as any, and more distinct from *neglecta* and *ragazzi* than those two forms are from each other.

### Anthreptes collaris zambesiana (Shelley)

*Anthodiaeta zambesiana* Shelley, Monogr. Nectarin., pt. 2, 1880, p. 243, pl. iii: Shupanga, Zambesi.

1 ♂, 1 ♀, Lumbo, Mozambique, 15 July 1918.

"Also Dar es Salaam." (A.L.)

[1] Ibis, 1928, p. 92.
[2] Journ. f. Ornith., 1923, Sonderheft, p. 217.

The reference to the original description of this bird as given above is taken from Sclater.[1] However, in Shelley's work there is included a list of dates of publication of the various parts, from which we learn that the description of *zambesiana* appeared in part 1, issued July 28, 1876. In the monograph, as finally bound together, the pages are renumbered, but *Anthodiaeta zambesiana* is on the 345th page, not the 243rd.

The Zambesi collared sunbird occurs along the coast of eastern Africa from Mozambique to the Pangani River in northeastern Tanganyika Territory.

The present specimens are fully adult and are in slightly abraded plumage.

### Anthreptes collaris elachior Mearns

*Anthreptes collaris elachior* Mearns, Smiths. Misc. Coll., **56**, no. 14, 1910, p. 5: Changamwe, Kenya Colony.

1 ♂, Morogoro, Tanganyika Territory, 3 July 1917.
1 ♂, Mombasa, Kenya Colony, 23 May 1918.

The Morogoro bird is intermediate between *elachior* and *zambesiana* and *teitensis,* but on the whole it seems as close to *elachior* as to either of the others.

The Morogoro area is therefore a meeting ground of these three subspecies.

Both specimens are in fairly fresh plumage.

### Anthreptes collaris ugandae van Someren

*Anthreptes collaris ugandae* van Someren, Bull. Brit. Orn. Cl., **41**, 1921, p. 113: Maraquet.

1 ♀, Ngong, Nairobi, Kenya Colony, 23 July 1919.

"Also a ♂ from Uganda." (A.L.)

This bird is immature. It has the plumage as in the adult female, but the rectrices are not more than half their ultimate size.

[1] Syst. Avium Aethiop., part ii, 1930, p. 708.

### Anthreptes longuemarei neglectus Neumann

*Anthreptes longuemarei neglectus* Neumann, Orn. Monatsb., **30**, 1922, p. 13: Uluguru Mountains, Tanganyika Territory.

1 adult ♀, 1 immature ♂, 1 immature ♀, Kilosa, Tanganyika Territory, 31 December 1920.

1 adult ♀, Uluguru Mountains, Tanganyika Territory, 19 May 1921.

"Also Bungu, Usambara Mountains." (A.L.)

The immature birds are much yellower below than the adults. The adult females have a distinct yellow area on the lower abdomen.

This race occurs in northern Tanganyika Territory in the Usambara and Uluguru Mountains, Pangani and Ruvu Rivers.

### Anthreptes orientalis barbouri Friedmann

*Anthreptes orientalis barbouri* Friedmann, Occ. Papers Bost. Soc. Nat. Hist., **5**, 1931, p. 383: Dodoma, Tanganyika Territory.

1 ♂, 1 ♀, Dodoma, Tanganyika Territory, 7 December 1918.

The female is the type of *barbouri*.

This race is characterized by its long, stout bill; the female is much larger than females of *orientalis*, but the male is matched in size by large specimens of the latter form (that is, in wing and tail dimensions, but not in bill measurements).

Both specimens are in fairly fresh plumage.

The race is known as yet only from the type locality.

## Family ZOSTEROPIDAE. White-eyes

### Zosterops senegalensis fricki Mearns

*Zosterops senegalensis fricki* Mearns, Smiths. Misc. Coll., **61**, no. 20, 1913, p. 6: Bowlder Hill, Thika River, Kenya Colony.

1 ♀, Kyambu, near Nairobi, Kenya Colony, 25 October 1920.

The single specimen collected is in somewhat abraded plumage.

This race of the yellow white-eye occurs in the Ukamba and Kikuyu districts, north to the Northern Guaso Nyiro River and the Endoto Mountains, Kenya Colony.

### Zosterops virens usambarae Reichenow

*Zosterops usambarae* Reichenow, Orn. Monatsb., **17**, 1909, p. 42: Mlalo, Usambara district.

1 ♀, Bagilo, Uluguru Mountains, Tanganyika Territory, 30 May 1922.
1 ♀, Mbeta, Uluguru Mountains, Tanganyika Territory, 24 July 1922.

In a previous publication[1] *usambarae* (wrongly written *usambaricus*) was considered a synonym of *niasse*, but this I consider to be erroneous, as the latter is a race of *Z. senegalensis*.

The present form is known to inhabit the Usambara and Uluguru Mountains. Sclater[2] writes that it also occurs in the highlands of Nyasaland, but inasmuch as *stierlingi* is known from the Livingstone Mountains, it seems doubtful that Nyasaland birds are *usambarae*.

In the Poroto Mountains and on Mt. Rungwe, in southwestern Tanganyika Territory *sarmenticia* Bangs and Loveridge replaces *stierlingi*.

### Zosterops virens kikuyuensis Sharpe

*Zosterops kikuyuensis* Sharpe, Ibis, 1891, p. 444: Kikuyu, Kenya Colony.

1 ♀, Ngong Forest, Kenya Colony, 24 July 1919.
1 ♂, Nairobi, Kenya Colony, 29 September 1920.
"Also Tumutumu." (A.L.)

This form of the green white-eye occurs on the highlands of Central Kenya Colony east of the Rift Valley.

### Zosterops virens stuhlmanni Reichenow

*Zosterops stuhlmanni* Reichenow, Journ. f. Ornith., 1892, p. 54: Bukoba, Tanganyika Territory.

1 ♂, Chantwara, Bukoba, Tanganyika Territory, 26 December 1922.

This bird is common throughout Uganda, where it has been found breeding in February, April, and July.

The specimen collected is in fairly fresh plumage.

[1] Ibis, 1928, p. 91.
[2] Syst. Avium Aethiop., part ii, 1930, p. 674.

## Family PLOCEIDAE. Weaver-birds

### Bubalornis albirostris nyansae (Neumann)

*Textor albirostris nyansae* Neumann, Journ. f. Ornith., 1905, p. 335: Kwa Kitoto, Kavirondo.

1 adult ♂, 1 immature ♂, Saranda, Kilimatinde, Tanganyika Territory, 6 March 1922.
2 ♀, Konzigwe, Dodoma, Tanganyika Territory, 16 March 1922.

The present race of the buffalo-weaver is well marked by the absence of white on the inner webs of the remiges. It occurs in the lake region from Kavirondo on the northeastern shore of Lake Victoria to the country north of Lake Nyasa. In northeastern Tanganyika Territory and most of Kenya Colony it is replaced by *intermedius* which has the inner margins and bases of the primaries whitish.

The immature male and one of the females are in molt; the other specimens are in fresh plumage.

Bowen[1] found a recently fledged young on June 27 in the Ikoma district. Schuster[2] found a nesting colony with eggs in various stages of incubation on January 25 at Makunga, near Ruaha.

### Dinemellia dinemelli boehmi Reichenow

*Dinemellia boehmi* Reichenow, Journ. f. Ornith., 1885, p. 372: type in Berlin Mus. from Kakoma.

1 ♂, 1 ♀, Simbo, Tabora, Tanganyika Territory, 12 November 1921.

"Also Mpinga, Zengeragusu, and Ushora."

The Unyamwesi white-headed buffalo weaver occurs in the interior of Tanganyika Territory from the Ikoma and Mwanza districts south to the northern end of Lake Nyasa. This form is much larger than the nominate one.

The present specimens are in fairly worn plumage; their dimensions are as follows: male—wing 136, tail 90, culmen 25.5; female—wing 127, tail 82, culmen 25 mm.

Loveridge[3] found this species in small parties of from 3 to 6 birds. He observed them building their nests during November at Ushora,

[1] Proc. Acad. Nat. Sci. Phil., **83**, 1931, p. 71.
[2] Journ. f. Ornith., 1926, p. 722.
[3] Proc. Zool. Soc. Lond., 1923, p. 903.

Ulugu, Wembere, Luguo, Tambali, and Simbo. He did not see the birds except at these localities.

Bowen[1] collected a bird in breeding condition in June in the Ikoma district.

### Histurgops ruficauda Reichenow

*Histurgops ruficauda* Reichenow, Journ. f. Ornith., 1887, p. 67: type in Berlin Museum from Wembere Steppe.

1 ♂, 1 ♀, Lalago, Mwanza, Tanganyika Territory, 17 October 1922.

"Also Sagayo. This is not an uncommon species in parts of the Mkalama-Mwanza thorn-bush steppe." (A.L.)

Both specimens are in fresh plumage.

Bowen[2] collected a male in breeding condition at Serronea River, Ikoma district, in the second week of June. Emin found nests with eggs in October at Usambiro.

### Pseudonigrita arnaudi emini (Reichenow)

*Nigrita emini* Reichenow, Journ. f. Ornith., 1891, p. 158: Muhalala, Ugogo, Tanganyika Territory.

1 ♂, 1 ♀, Mahaka, Dodoma, Tanganyika Territory, 20 March 1922.

Selater[3] considers *emini* a synonym of *arnaudi*, as the former was based on an immature bird with a brownish head. However, the present two adults must be considered *emini* by virtue of the proximity of Mahaka to Muhalala, and they are certainly distinct from *arnaudi* and from *kapitensis*. They are like *dorsalis*, with pale creamy brown backs and a large grayish area on the middle of the back, but differ from that form in having black in the rectrices as in the nominate form or in *kapitensis*. If topotypical adults of *emini* should prove to be identical with *kapitensis*, then the latter form would have to be called *emini* and the Dodoma birds would need a name.

The present specimens are in slightly worn plumage. The wing length of the male is 60 mm., of the female 59 mm.

Dodoma is the southernmost locality from which *emini* has been recorded.

[1] Proc. Acad. Nat. Sci. Phila., **83**, 1931, p. 71.
[2] Proc. Acad. Nat. Sci. Phila., **83**, 1931, p. 71.
[3] Syst. Avium Aethiop., part ii, 1930, p. 719.

### Pseudonigrita arnaudi dorsalis (Reichenow)

*Nigrita dorsalis* Reichenow, Journ. f. Ornith., 1887, p. 71: Wembere Steppe.

Loveridge collected a pair of these birds at Sagayo near Mwanza. These birds, which have not been available in the present connection, were identified by Dr. J. P. Chapin.

### Passer iagoensis rufocinctus Finsch and Reichenow

*Passer rufocinctus* Finsch and Reichenow, Journ. f. Ornith., 1884, p. 55: Lake Naivasha, Kenya Colony.

1 ♀, Nairobi, Kenya Colony, 27 September 1920.

This specimen agrees very closely with topotypical material of *rufocinctus*. It is in slightly worn plumage.

The rufous sparrow nests during June and October.

### Passer griseus suahelicus Reichenow

*Passer griseus suahelicus* Reichenow, Vög. Afr., **3**, 1904, p. 231: Busisi, Mwanza district, Tanganyika Territory.

1 ♂, 1 ♀, Tabora, Tanganyika Territory, 11 February 1918.

"Also Dar es Salaam, Morogoro, Kilosa, and Dodoma." (A.L.)

This race is a rather poorly marked one, and is really intermediate in its characters between *ugandae* and *diffusus*, but somewhat nearer the former. It inhabits the greater part of Tanganyika Territory south to Nyasaland.

The present specimens are in fairly fresh plumage.

### Passer griseus mosambicus van Someren

*Passer griseus mosambicus* van Someren, Bull. Brit. Orn. Cl., **41**, 1921, p. 114: Lumbo, Mozambique.

1 ♀, Lumbo, Mozambique, 13 July 1918.

This is another doubtful race, intermediate between *suahelicus* and *diffusus* in its characters. It inhabits coastal Tanganyika Territory and Mozambique to the Zambesi River.

The specimen obtained is just completing its tail molt and is otherwise in fresh plumage.

### Passer griseus ugandae Reichenow

*Passer diffusus ugandae* Reichenow, Vög. Afr., **3**, 1904, p. 231: Uganda.

1 ♀, Kabale, Ruanda, Uganda, 15 September 1919.
1 ♂, Sanga, Ankole, Uganda, 24 October 1919.

"Also Ndeza, Ankole, Uganda." (A.L.)

The Uganda gray-headed sparrow occurs in Uganda and extreme western Kenya Colony, south through the eastern Belgian Congo to Northern Rhodesia, and west to southern Cameroon. It is whitish below, and rich reddish brown above, but, like most of the races of this species, its characters need series for their demonstration.

The female is in molt; the male in somewhat abraded plumage.

### Passer gongonensis (Oustalet)

*Pseudostruthus gongonensis* Oustalet, Le Naturalists, 1890, p. 274: Gongoni, near Mombasa.

1 ♂, Frere Town, Mombasa, Kenya Colony, 25 May 1918.
1 ♂, 1 ♀, Nairobi district, Kenya Colony, 26 August, 3 September 1920.

The Mombasa bird is whiter on the abdomen than either of the other two or than any in a long series from northern Kenya Colony and southwestern Ethiopia. It may be a hybrid between *gongonensis* and *P. griseus suahelicus*. It is a youngish bird, however, and has a brownish bill. All three specimens are in fairly fresh plumage.

### Sorella eminibey eminibey Hartlaub

*Sorella eminibey* Hartlaub, Journ. f. Ornith., 1880, pp. 211, 235: Lado, Upper Nile.

1 ♀, Dodoma, Tanganyika Territory, 5 December 1921.
1 ♂, Kinyambwa, Dodoma, Tanganyika Territory, 7 April 1922.

These two specimens constitute the southernmost records for the species, which was previously known from only as far south as Nguruman and the Wembere steppes.

The April bird is in worn plumage; the December specimen is in fairly fresh feathering. The species has been known to nest in July in the Ikoma area.

*S. e. guasso* van Someren appears to be separable, but is still somewhat doubtfully valid.

### Sporopipes frontalis cinerascens Madarasz

*Sporopipes cinerascens* Madarasz, Ann. Mus. Hung. Budapest, **13**, 1918, p. 395: Ruvana Steppes, Mwanza district, Tanganyika Territory.

1 ♂, Samumba, Tanganyika Territory, 27 February 1922.
1 ♀, Sagayo, Mwanza, Tanganyika Territory, 24 October 1922.

Two forms of the speckle-fronted weaver occur in Tanganyika Territory, the present gray breasted one from the Ikoma and Mwanza areas to Uhele, and a white-breasted, pale-naped race, *emini*, from Ugogo to Dodoma.

Schuster[1] found this bird not uncommon in the Unyamwesi area.

The present specimens are in worn plumage.

*Sporopipes frontalis loitanus* van Someren is a synonym.

### Sporopipes frontalis emini Neumann

*Sporopipes frontalis emini* Neumann, Journ. f. Ornith., 1900, p. 283: Ugogo, Tanganyika Territory.

1 ♂, Dodoma, Tanganyika Territory, 7 December 1918.

This specimen is practically a topotype as Dodoma is the capital town of Ugogo. It is a freshly plumaged bird in a late stage of its annual molt. It has the occiput and nape much paler and the breast whiter, less washed with grayish, than in *cinerascens*.

### Ploceus kersteni (Finsch and Hartlaub)

*Sycobrotus kersteni* Finsch and Hartlaub, Vög. Ostafr., 1870, p. 404; pl. vi: Zanzibar.

1 ♂, 1 ♀, Uluguru Mountains, Tanganyika Territory, 9 May 1921.
"Also Bungu." (A.L.)

Both specimens are adults in fresh plumage.

Sclater[2] considers *kersteni* a race of *bicolor*, but it is so very distinct that it may just as well be called a species although a geographical representative of *bicolor*. It occurs throughout the northern half of Tanganyika Territory, north in coastal and subcoastal Kenya Colony to Jubaland.

A nest has been found in August in Zanzibar.

[1] Journ. f. Ornith., 1926, p. 723.
[2] Syst. Av., Aethiop., part ii, 1930, p. 731.

### Ploceus insignis ornatus Granvik

*Ploceus insignis ornatus* Granvik, Orn. Monatsb., **30**, 1922, p. 40: Kyambu, near Nairobi.

1 ♂, 1 ♀, Ngong Forest, near Nairobi, Kenya Colony, 21 July 1919.

The male shows the characters of *ornatus* in having faint rufescent markings on the breast. The female is a subadult bird and has some dark greenish feathers still present among the black ones on the crown.

This bird occurs in the mid-highlands of Kenya Colony to the east of the Rift Valley, west of which it is replaced by *P. i. insignis.*

### Ploceus reichenowi reichenowi (Fischer)

*Sycobrotus reichenowi* Fischer, Journ. f. Ornith., 1884, p. 180: Great Arusha, Tanganyika Territory.

1 ♀, Nairobi, Kenya Colony, 20 May 1915.
1 ♂, Nairobi, Kenya Colony, 18 September 1919.

"Also Bungu and Tumutumu." (A.L.)

On the label of the male is written,—"fell dead from tree; haemorrhage eyes, beak, lungs, heart, ear; believed to be bitten by boomslang," (a poisonous snake).

The male is in fairly fresh plumage; the female is considerably abraded.

This weaver is common throughout Kenya Colony west to the Rift Valley. On Mt. Elgon it is replaced by a black-templed form, *nigritemporalis.*

### Ploceus stuhlmanni stuhlmanni (Reichenow)

*Symplectes stuhlmanni* Reichenow, Orn. Monatsb., **1**, 1893, p. 29: type in Berlin Mus. from Bukoba.

1 ♂, Kabare, Bukoba, Tanganyika Territory, 13 January 1923.

Stuhlmann's weaver occurs from southwestern Ethiopia to the Kaimosi-Kakamega area between Mt. Elgon and Kisumu across Uganda to adjacent parts of the eastern Belgian Congo, and northwestern Tanganyika Territory.

[1] Ibis, 1916, p. 404.

The single specimen collected is in fairly fresh plumage.

According to van Someren,[1] the nesting season is in April and September.

### Ploceus bertrandi (Shelley)

*Hyphantornis bertrandi* Shelley, Ibis, 1893, p. 23, pl. ii: type in British Museum from plains near Milanji.

1 ♂, Uluguru Mountains, Tanganyika Territory, 15 May 1921.

The single specimen collected is in very worn plumage.

This weaver occurs throughout the slopes of hilly country in the highlands of Nyasaland and of Tanganyika Territory north to the Uluguru Mountains.

According to Belcher,[1] it is commonest at altitudes of about 3,000 feet.

### Ploceus melanogaster stephanophorus (Sharpe)

*Heteryphantes stephanophorus* Sharpe, Ibis, 1891, p. 117, pl. vi, fig. 2: Mau, Kenya Colony.

1 (♂), Ndeza, Ankole, Uganda, 9 September 1919.

This species occurs in the forests of Uganda and of western Kenya Colony. Van Someren[2] writes that it is rather uncommon in Uganda; in another publication[3] he says it is fairly common on Mt. Elgon. Granvik[4] found it uncommon on that mountain. He found a nest with eggs there on June 8. Jackson found young birds in July at Eldama Ravine and Nandi.

The single specimen collected is unsexed but is an adult male by plumage characters. It is in somewhat abraded condition.

### Ploceus nigerrimus Vieillot

*Ploceus nigerrimus* Vieillot, N. Dict. d'Hist. Nat., **34**, 1819, p. 130: "Congo Kingdom," that is, Portuguese Congo.

1 ♂, 1 ♀, Maziba, Mawokota, Uganda, 19 August 1919.
1 ♂, Chantwara, Bukoba, Tanganyika Territory, 6 January 1923.

"Also Kabare, Bukoba." (A.L.)

[1] Birds of Nyasaland, 1930, p. 309.
[2] Ibis, 1916, p. 405.
[3] Nov. Zool., **25**, 1918, p. 280.
[4] Journ. f. Ornith., 1923, Sonderheft, pp. 159–160.

The Chantwara male is in molt and has a few greenish-yellow feathers on the middle of the abdomen, flanks and rump, and has buffy-edged greater upper wing coverts.

The black weaver occurs from southern Nigeria, Cameroon, Gaboon, and northern Angola east to Uganda and adjacent parts of Tanganyika Territory and of Kenya Colony. It is a common bird and nests in flocks in palm trees. The nesting season in Uganda is from May to July and in December and January.

### Ploceus capitalis dimidiatus (Antinori and Salvadori)

*Hyphantornis dimidiata* Antinori and Salvadori, Atti. R. Acad. Torino, **8**, 1873, p. 360: Kassala.

1 ♂, Mwanza, Tanganyika Territory, 7 December 1922.
1 ♀, Kabare, Bukoba, Tanganyika Territory, 22 January 1923.

In the absence of any topotypical *dimidiatus* I cannot venture an opinion as to the validity of *fischeri*, and therefore follow Sclater in considering the latter name a synonym of the former. The Mwanza bird is practically topotypical of *fischeri*.

There is a possibility that *dimidiatus* may be divisible. Thus, 4 males from Nyanza, northeastern shore of Lake Tanganyika, average paler, less deep bay color, more yellowish chestnut, on the breast and upper abdomen, and slightly less yellowish, more greenish on the upper back than 6 comparable birds from the Budongo Forest, western Uganda. The present Mwanza bird is intermediate, being like the Budongo birds above and like the Nyanza specimens on the under parts. Some of the Budongo birds are almost as dark as *jacksoni* on the under surface, and suggest a link between the two species—*capitalis* and *jacksoni*.

These birds recall the observations made by van Someren.[1] He found that Uganda birds were dark, " . . . the underside . . . very dark chestnut, not quite as dark as *P. jacksoni*," while a series from western Kenya Colony are paler, " . . . the breast and rest of the underparts are cadmium yellow with only a small amount of rufous or chestnut shading on the crop; in two specimens this shading is almost absent, thus closely resembling *P. capitalis*. It appears . . . that we have two distinct subspecies here, but as we are unable to examine the types of *P. fischeri* and *P. dimidiatus*, no final conclusion can be drawn."

[1] Ibis, 1916, pp. 410–411.

The Uganda yellow-collared weaver occurs from the Sudan south through the eastern Belgian Congo, Uganda, and western Kenya Colony to northwestern Tanganyika Territory (Kagehi, Mwanza) and to Nyanza, at the northeast end of Lake Tanganyika, in the Congo region.

The two specimens listed above are in fresh plumage.

The breeding season is from December to January and from May to July. The nests are built in the papyrus and even in the maize in native shambas.

### Ploceus jacksoni jacksoni Shelley

*Ploceus jacksoni* Shelley, Ibis, 1888, p. 293, pl. vii: Kilimanjaro; probably Lake Jipe, near Taveta.

1 ♂, Kilosa, Tanganyika Territory, 17 January 1921.
1 ♀, Kinyambwa, Dodoma, Tanganyika Territory, 12 April 1922.

"Also Mwanza, Buchosa and Kabare, Bukoba." (A.L.)

Sclater[1] gives the Morogoro district as the southern limit of the range of Jackson's weaver. The present bird from Dodoma is then a very southern record for the species. It is not generally known that this bird occurs west to the eastern border of the Belgian Congo, but the United States National Museum has several specimens collected at Nyanza on the northeast shore of Lake Tanganyika. These represent a distinct race, *jucundus*, as they have the inner margins of the rectrices much paler yellow, the under tail coverts more washed with dull chestnut, the brown of the breast and upper abdomen duller and slightly darker, the yellow of the back slightly paler than in typical *jacksoni*. The Congo birds also have a slight brownish nuchal fringe on the posterior border of the black of the nape.

Lynes[2] has recently found *jacksoni* as far south as Iringa.

The male is in fresh plumage; the female is in worn condition. According to van Someren[3] the birds breed in January and in May in Uganda. The birds nest in the papyrus and in maize patches in native clearings.

[1] Syst. Avium Aethiop., part ii, 1930, p. 738.
[2] Journ. f. Orn., **82**, 1934, Sonderheft, p. 119.
[3] Ibis, 1916, pp. 409–410.

### Ploceus spekei (Heughlin)

*Hyphantornis spekei* Heuglin, in Peterm. Mitt. 1861, p. 24: Somali (founded on *H. baglafecht* Blyth (nec Vieillot), Journ. Asiat. Soc. Beng., **24**, p. 301).

1 adult ♂, Nairobi, Kenya Colony, 13 October 1915.
1 immature ♂, 1 ♀, Nairobi, Kenya Colony, 16 July 1919.

Speke's weaver occurs from Somaliland and southern Ethiopia south to southern Kenya Colony chiefly, but not wholly, to the east of the Rift Valley. It is mainly a bird of the semi-arid country.

The October bird is in fresh plumage; the July specimens are somewhat abraded.

The breeding season is in May.

### Ploceus nigriceps nigriceps (Layard)

*Hyphantornis nigriceps* Layard, Bds. S. Afr., 1st ed., 1867, p. 180: Kuruman.

3 ♂, 1 ♀, Morogoro, Tanganyika Territory, 20 August–24 October 1917.
1 ♂, Nairobi, Kenya Colony, 30 August 1920.

> "Also Dar es Salaam, Kilosa, Dodoma, Tabora, Kome Island, Kabare, Bukoba, and Lumbo, Mozambique. The commonest and most widely distributed species of the yellow weavers as far as my observations go." (A.L.)

One of the males (in winter plumage) resembles the female; two others are beginning to molt into nuptial plumage and have the underparts largely yellow, some black feathers appearing on the chin, upper throat, cheeks, lores, and crown, and a few black feathers margined with yellow on the upper back. The wings feathers are new, the rectrices old. These molting birds were taken in August. The Nairobi bird is in nuptial dress.

In the territory under consideration in this paper this weaver is widely distributed throughout Kenya Colony, Tanganyika Territory, and Mozambique. It does not occur in Uganda.

The nesting season is chiefly from February to June.

I have not seen the specimens Loveridge obtained at Kabare, Bukoba, but, judging by locality, they must be *P. nigriceps graueri* Hartert.

### Ploceus cucullatus feminina (Ogilvie-Grant)

*Hyphantornis feminina* Ogilvie-Grant, Bull. Brit. Orn. Cl., **21**, 1907, p. 15: Mokia, Toro district, Uganda.

1 ♀, Kabale, Ruanda, Uganda, 24 September 1919.
1 ♂, Rutaka, Ruanda, Uganda, 5 October 1919.

The female is in worn plumage; the male is freshly feathered.

This weaver occurs from Ruwenzori east across Uganda to Mt. Elgon. In the north Kavirondo country it merges with *P. c. abyssinicus*. It occurs northward into the Sudan, west as far as Darfur.

The breeding season in Uganda is in March and April and in October.

### Ploceus rubiginosus rubiginosus Rüppell

*Ploceus rubiginosus* Rüppell, N. Wirbelth., Vög., 1840, p. 93, pl. xxxiii, fig. 1: Abyssinia.

1 ♂, Suna, Singida, Tanganyika Territory, 28 February 1922.
1 ♂, Kinyambwa, Dodoma, Tanganyika Territory, 27 April 1922.

"Also Mahaka." (A.L.)

The chestnut weaver occurs from central Tanganyika Territory, north through Kenya Colony to southern Ethiopia.

Schuster[1] found this species two days march south of Dodoma. The birds were engaged in nesting at the time (3 March). The present specimens, taken in February and April, are in nuptial plumage, and may well have been breeding when killed.

### Ploceus pelzelni tuta (Bangs and Phillips)

*Icteropsis pelzelni tuta* Bangs and Phillips, Occ. Papers Bost. Soc. Nat. Hist., **5**, 1925, p. 177: Busisi, Mwanza district, Tanganyika Territory.

1 ♂, Kabura, Mawokota, Uganda, 19 August 1919.
1 ♀, Ndeza, Ankole, Uganda, 10 September 1919.

This large race of the slender-billed weaver occurs from the Mwanza area, north, west of Lake Victoria, to Ankole and southwestern Uganda generally. On the southeastern slopes of Ruwenzori it intergrades with typical *pelzelni*, which differs only in its smaller size.

[1] Journ. f. Ornith., 1926, p. 723.

The present specimens are rather small for *tuta* having wing lengths of 62 and 63 mm., respectively. Both are in fairly fresh plumage.

The breeding season is probably somewhat irregular. Nests have been found in July.

### Ploceus pachyrhynchus pachyrhynchus Reichenow

*Ploceus pachyrhynchus* Reichenow, Orn. Monatsb., **1**, 1893, p. 29: Kerevia, in the Semliki valley.

1 ♂, 1 ♀, Kabare, Bukoba, Tanganyika Territory, 12 January 1923.

These two specimens are in somewhat abraded plumage.

The compact weaver is chiefly a West African bird, but ranges across the Congo to Uganda east to Kisumu on the Kenya border and to Bukoba on the Tanganyika boundary. A single female has been taken in southwestern Ethiopia (Omo river) and separated as a race, *omoensis*, by Neumann.[1] Van Someren[2] writes that he has examined the type of *omoensis* and finds it quite like some Ugandan specimens. He therefore regards it as an untenable form.

In Uganda this weaver is fairly common. Van Someren[3] found the birds breeding in May in the tall elephant-grass.

### Ploceus ocularius crocatus (Hartlaub)

*Hyphantornis crocata* Hartlaub, Abhandl. Nat. Ver. Bremen, **7**, 1881, p. 100: Magungo, Victoria Nile.

1 ♂, Kabura, Mawokota, Uganda, 18 August 1919.

The Uganda spectacled weaver occurs from extreme western Kenya Colony west across Uganda and the Congo to Cameroon and Angola. It has the forehead, cheeks, and sides of the throat bright yellow, while the more eastern race *suahelicus* is brownish in those parts.

The present specimen is in fairly fresh plumage. In Uganda the nesting season is from April to June.

[1] Journ. f. Ornith., 1905, p. 342.
[2] Nov. Zool., **29**, 1922, p. 144.
[3] Ibis, 1916, p. 412.

### Ploceus ocularius suahelicus Neumann

*Ploceus ocularius suahelicus* Neumann, Journ. f. Ornith., 1905, p. 339: Lewa, Usambara.

1 ♂, 1 ♀, Lumbo, Mozambique, 31 September 1918.

1 ♂, Kilosa, Tanganyika Territory, 27 January 1921.

"Also Mombasa, Bungu, and Dar es Salaam." (A.L.)

The Kilosa bird is a juvenal specimen not fully grown. It resembles the female in color, but has a light brownish bill. It could not have been out of the nest more than three weeks when collected. The breeding season must be quite prolonged as Fischer found occupied nests late in August, and van Someren records them in June, July, and November.

### Ploceus nigricollis melanoxanthus (Cabanis)

*Hyphanturgus melanoxanthus* Cabanis, Journ. f. Ornith., 1878, pp. 205, 232: Mombasa.

1 ♂, Dodoma, Tanganyika Territory, 24 December 1918.

"Also Mahaka." (A.L.)

Dodoma is one of the southernmost localities from which this weaver has been recorded.

The present specimen is peculiar in that it has a few pale yellow feathers among the black ones in the mantle and the lesser upper coverts of the left wing. It has a noticeably larger bill (culmen 20 mm.) and slightly longer wing than any comparable specimens from Kenya Colony and southern Ethiopia. More material may indicate a large subspecies at the southern end of the range of *melanoxanthus*.

### Ploceus aureoflavus aureoflavus Smith

*Ploceus aureoflavus* A. Smith, Ill. Zool. S. Afr., Aves, 1839, text to pl. xxx, fig. 1: "W. Africa;" probably Zanzibar.

1 ♂, Kilosa, Tanganyika Territory, 21 January 1921.

"Also Dar es Salaam." (A.L.)

Sclater[1] considers *castaneiceps* and *bojeri* as races of *aureoflavus*, but I cannot agree with him as all occur together in the Taveta area. That

[1] Syst. Avium Aethiop., part ii, 1930, p. 747.

they are closely allied is unquestionable. It is one of those cases when taxonomic procedure is inadequate to express the truth.

The range of *aureoflavus* is from Zanzibar and the coastal belt of northern Tanganyika Territory and of extreme southern Kenya Colony, inland to the Teita and Taveta regions south to Morogoro and Kilosa. The present specimen from Kilosa is the southernmost record for the species and constitutes a considerable extension of known range. According to Sclater, the birds of Kilosa and Morogoro are *castaneiceps* and not *aureoflavus*, but the present individual is certainly different from *castaneiceps* from Taveta.

The bird is in fresh plumage.

I have not seen Meise's form *reicherti*, from Mbamba Bay, Lake Nyasa.

### Ploceus castaneiceps (Sharpe)

*Hyphantornis castaneiceps* Sharpe, Cat. Bds. Brit. Mus., **13**, 1890, p. 448, pl. xiii, fig. 5: Taveta.

1 ♀, Morogoro, Tanganyika Territory, 23 March 1917.

This specimen is referred to this form more by elimination than by anything else. It has very yellowish underparts and therefore cannot be *aureoflavus*. This leaves *castaneiceps* and *bojeri* to be considered, and as the former is known to occur at Morogoro while the southern limit of the range of the latter is considerably to the north of that area, the geographic evidence favors the identification here employed. The present specimen is subadult, which makes it all the harder to be sure of its determination.

### Ploceus bojeri (Cabanis)

*Hyphantornis bojeri* Cabanis, in von der Decken, Riese, **3**, Vögel, 1869, p. 32: Mombasa (ex MS. Finsch and Hartlaub).

1 ♂, Mombasa, Kenya Colony, 30 May 1918.

"Also Dar es Salaam." (A.L.)

The specimen is in fresh, adult plumage.

The golden weaver is a very common bird in the coastal districts of Kenya Colony and northern Tanganyika Territory.

I have not seen the Dar es Salaam bird but it it is really *bojeri*, it constitutes the southernmost record of the species.

### Ploceus xanthops camburni (Sharpe)

*Hyphantornis camburni* Sharpe, Bull. Brit. Orn. Cl., **10**, 1890, p. 35: Mt. Kenya.

2 ♂, Kabale, Ruanda, Uganda, 20 September 1919.
1 ♀, Nairobi district, Kenya Colony, 8 September 1920.
1 ♂, Mwanza, Tanganyika Territory, 17 January 1928.

"Also Katabusungu, Buddu, Uganda." (A.L.)

This golden weaver is fairly common in Uganda, the eastern Congo, and the interior of Kenya Colony and of Tanganyika Territory. In the eastern Congo the birds are not quite typical, but begin to approach the nominate form. Uganda birds seem to have slightly smaller bills than Kenyan ones, but the difference is very slight and not constant. Van Someren[1] suggested that they might be separated, but I cannot see enough reason for so doing.

### Ploceus xanthops jamesoni (Sharpe)

*Hyphantornis jamesoni* Sharpe, Cat. Bds. Brit. Mus., **13**, 1890, p. 447: Umfuli River.

1 ♂, Lumbo, Mozambique, 20 July 1918.

This specimen is not entirely typical of *jamesoni* and approaches *camburni*. It is nearer to the former race, however.

This race of the golden weaver occurs from Swaziland and the eastern Transvaal north to Bechuanaland, Rhodesia, and Mozambique. It has less yellow, on the forehead and crown, and more of a greenish cast to the back, than camburni.

### Malimbus rubricollis centralis Reichenow

*Malimbus rubricollis centralis* Reichenow, Orn. Monatsb., **1**, 1873, p. 30: Nduluma, Ituri district.

1 unsexed, Uganda, 1919.
1 ♀, Kakindu, Bukoba, Tanganyika Territory, 28 January 1923.

The Uganda malimbe occurs from the Kakamega-Kaimosi region south of Mt. Elgon, west across Uganda, to the Ituri district of the Belgian Congo and adjacent parts of extreme northwestern Tanganyika Territory.

[1] Nov. Zool., **29**, 1922, pp. 140–141.

The January specimen shows signs of molt in the rectrices; the other example is peculiar in that the tips of the rectrices are badly frayed, but the rest of the plumage is not particularly abraded. Van Someren[1] collected a molting bird in April. According to his observations, the birds nest in April and May in Uganda.

### Amblyospiza albifrons unicolor (Fischer and Reichenow)

*Pyrenestes unicolor* Fischer and Reichenow, Orn. Centralbl., 1878, p. 88: Zanzibar; see Journ. f. Ornith., 1878, p. 264.

1 ♂, 1 ♀, Kilosa, Tanganyika Territory, 10–17 January 1921.

"Also Bungu; Uluguru Mountains; Tindiga; and Kome Island." (A.L.)

The male is largely in fresh plumage; the feathers still have whitish edges. The female is abraded.

The coast grosbeak weaver occurs in the coastal belt from the Juba River south to Bagamoyo and inland to the Kilimanjaro plains, to Kilosa, and, to judge from Loveridge's manuscript notes, to Kome Island near Mwanza. The last named locality is very surprising—the bird is possibly not *unicolor*, but intermediate between it and either *montana* or *melanota*.

However, it may be noted that van Someren[2] writes that *melanota* occurs, " . . . south to Victoria Nyanza, into East Africa as far south as Fort Ternan. Further south its place is taken by *A. unicolor*."

This bird nests in the swamps and consequently is absent in a large part of its range. During the non-breeding season it also occurs in forested areas but not as commonly as in marshes. In spite of its great heavy bill, it is an expert weaver, making very delicately and firmly woven nests.

### Amblyospiza albifrons melanota (Heuglin)

*Coryphegnathus melanotus* Heuglin, Journ. f. Ornith., 1863, p. 21: Bahr el Abiad, that is, Upper White Nile.

1 juvenal ♂, Rukaya, Mawokota, Uganda, 5 November 1919.

The juvenal male plumage resembles that of the adult female. This race has this plumage redder above and more heavily streaked

[1] Ibis, 1916, pp. 403–404.
[2] Ibis, 1916, p. 413.

below than *montana* or *unicolor*. It occurs from Kavirondo through Uganda to the eastern Congo and southern Sudan. The adult male has the head, nape, and throat deep chestnut brown while in *montana* and *unicolor* these parts are fuscous brown.

The present specimen is in somewhat worn plumage.

### Anaplectes melanotis (Lafresnaye)

*Ploceus melanotis* Lafresnaye, Rev. Zool., 1839, p. 20: Senegal.

1 ♂, Kilosa, Tanganyika Territory, 25 January 1921.
1 ♂, Ushora, Singida, Tanganyika Territory, 20 October 1921.

The Ushora bird is much paler red, more orange, on the head and throat than the Kilosa bird, which has dark scapulars, thereby approaching the specimen described as *A. blundelli*. Both are in abraded condition.

These two specimens exhibit almost the extremes in variation of a large series with regard to the amount of black on the head. One has the entire chin and upper throat, lores, circumocular region, cheeks, and auriculars black; the other has the lores, a narrow circumocular space, and the auriculars black, the rest red.

The red-winged anaplectes occurs from southwestern and central Tanganyika Territory, north to Ethiopia and Somaliland west through the Sudan to Senegal.

Böhm found this bird breeding in May at Kakoma.

### Anaplectes rubriceps (Sundevall)

*Ploceus* (*Hyphantornis*) *rubriceps* Sundevall, Oefv. K. Sv. Vet. Ak. Förh., **7**, 1850, p. 97: Upper Caffraria, that is, Mohapoani Berg, Bechuanaland.

1 ♂, Morogoro, Tanganyika Territory, 17 September 1917.
1 ♀, Kilosa, Tanganyika Territory, 25 January 1921.

"Very common at Kilosa but not at Morogoro so far as my observations went." (A.L.)

The male has the back quite greenish yellow in appearance (due to the feathers being margined with this color) while another from Victoria Falls (in worn plumage) is dull earth gray. The present male has the crown and occiput much deeper, richer red, not orange-red as in the Zambesi bird, and it also differs from the latter in the edges of

the primaries. These are orange yellow in the Morogoro example, yellow in the one from Victoria Falls.

The present male is in molt and is a little aberrant in that it has a few reddish feathers on the back and rump and abdomen. The inner remiges are externally bordered with white or yellowish white, not orange yellow as are the outer ones.

The yellow-winged anapleetes occurs from the northeastern Transvaal and Rhodesia north through eastern Africa to northeastern Tanganyika Territory.

Loveridge found an occupied nest at Tambali on 11 November and another at Isikisia on 16 November. The first nest contained one fresh egg; the other, two unequal-sized young.[1]

### Quelea quelea aethiopica (Sundevall)

*Ploceus acthiopicus* Sundevall, Oefv. K. Sv. Vet.-Akad., Förh., **7**, 1850, p. 126: Sennar.

1 ♂, 1 ♀, Morogoro, Tanganyika Territory, 19 August, 29 October 1917.
1 ♂, 1 ♀, Kinyambwa, Dodoma, Tanganyika Territory, 7 April 1922.
1 ♂, 1 ♀, Simbiti River, near Mkalama, Tanganyika Territory, 13 October 1922.

"Also Nairobi, Bagilo, Kilosa, Kome Island, and Buchosa." (A.L.)

The Simbiti River specimens are beginning to molt into breeding plumage. They indicate that even birds with a deep suffusion of pink on the breast become pale buffy in the "winter" dress. The prenuptial molt appears to begin on the chin and upper throat.

The bird listed as from Buchosa has not been available for study, and it appears to be only doubtfully of this race. By locality it would seem to be as near *centralis* or *aethiopica*.

The range of *aethiopica* is from Central Tanganyika Territory north through eastern Africa to Eritrea and to Sennar. In Uganda and southern Sudan and the eastern Ituri district of the Belgian Congo it is replaced by *centralis*, the females of which are darker above, especially on the head.

On 13 October, at the Simbiti River, Loveridge witnessed a great flight of these birds. He noted[2] that, " . . . millions of birds must

[1] See Proc. Zool. Soc. Lond., 1923, p. 903.
[2] Proc. Zool. Soc. Lond., 1923, p. 903.

have taken part . . . They were in a series of huge flocks which had almost the appearance of smoke as each thinned and thickened in the undulating flight . . . "

### Quelea quelea centralis van Someren

*Quelea sanguinirostris centralis* van Someren, Bull. Brit. Orn. Cl., **41**, 1921, p. 122: Lake Edward.

1 ♀, Kabura, Mawokota, Uganda, 25 August 1919.
1 ♂, Kalinda, Mawokota, Uganda, 27 August 1919.
2 ♂, Ndeza, Ankole, Uganda, 9 September 1919.
1 ♀, Singo, Ruanda, Uganda, 25 September 1919.

The Ruanda bird is of the "*russi*" phase with buff instead of black on the cheeks and upper throat. It is peculiar in that it has a broad pectoral band of deep purplish pink but is otherwise buffy. One of the Ndeza males has a similar pectoral band, but also has the crown pinkish, and has black on the cheeks and upper throat. The other Ndeza bird has no pinkish at all.

### Quelea erythrops (Hartlaub)

*Ploceus erythrops* Hartlaub, Rev. Zool., 1848, pl. cix: São Thomé Island.
1 ♂, Morogoro, Tanganyika Territory, 19 August 1917.
1 ♂, Mombasa, Kenya Colony, 25 May 1918.
1 ♀, Kome Island, Mwanza, Tanganyika Territory, 26 November 1922.

"Also Dar es Salaam, Bagilo, Kilosa, Mwanza, and Kabare." (A.L.)

The red-headed dioch occurs throughout the regions represented in the present collection, but is nowhere common. In Tanganyika Territory it has been found at the Pangani River, at Mtoni on the Kingani River, and at the localities mentioned above. In Kenya Colony it has been recorded from Mombasa, Changamwe, Mumias; in Uganda, from Masindi, Entebbe, and Mawokota.

The Mombasa male is in worn plumage; the female also but has rather fresh wing feathers. The latter bird has a decidedly yellowish wash on the chin, upper throat, cheeks, and superciliary stripes. The Morogoro bird is in fresh dry season plumage. It has a reddish wash on the cheeks and superciliaries.

### Quelea cardinalis cardinalis (Hartlaub)

*Hyphantica cardinalis* Hartlaub, Journ. f. Ornith., 1880, p. 325: Lado.

1 ♂, Nairobi, Kenya Colony, 22 May 1919.
1 ♀, Kilosa, Tanganyika Territory, 1 March 1922.

The male is much abraded; the female less so. The latter has reddish superciliaries, and a yellowish cast on the chin and upper throat.

Sclater[1] gives the range of this bird as "Upper White Nile, south Ankole and the inland portion of Kenya Colony to northwestern Rhodesia and Tanganyika Territory (Kasuli—*C. Grant*)." This suggests that the cardinal dioch is known from but a single Tanganyikan locality, but it has been taken at Nguruman, at Karema, at Kilosa, at Temewagwe, on the Ruaha River, and in the country between Uhehe and Ubena as well. Schuster[2] has extended its known range to the Uhehe-Ubena area. Lynes[3] found it nesting in the Iringa district.

In Kenya Colony it is common at Nairobi and westward to Kavirondo, the Trans-Nzoia, and Mt. Elgon. It also occurs at Taveta. In northern Kenya Colony (Indunumara Mountains) it is replaced by a very pale form, *pallida*.

### Euplectes nigroventris Cassin

*Euplectes nigroventris* Cassin, Proc. Acad. Nat. Sci. Phil., 1848, p. 66: Zanzibar.

1 ♂, Morogoro, Tanganyika Territory, 13–29 March 1917.
1 ♂, Kilosa, Tanganyika Territory, 4 January 1921.

"Also Bagilo and Dar es Salaam." (A.L.)

The Zanzibar red bishop occurs in the coastal areas of Kenya Colony from Lamu southward. In Tanganyika Territory it occurs along the coast but also inland to the Kilosa and Morogoro districts (in Kenya Colony an allied species *rufigula* replaces it in the Teita and Ukamba areas); in Mozambique *nigroventris* is known from the coastal belt, but it is not known whether it occurs inland or not.

Van Someren[4] described *rufigula* from the N'zin River, Ukamba, as a race of *nigroventris* on the basis of the male differing, " . . . from

[1] Syst. Avium Aethiop., part ii, 1930, p. 759.
[2] Journ. f. Ornith., 1926, p. 724.
[3] Journ. f. Orn., **82**, 1934, Sonderheft, p. 120.
[4] Bull. Brit. Orn. Cl., **41**, 1921, p. 122.

that of *P. n. nigroventris* in having the whole throat or part of it red, instead of black, though two specimens are like *nigroventris*." Sclater[1] considers *rufigula* as a distinct species. I have seen no material of *rufigula* and therefore follow Sclater. However, the specimens van Someren records[2] indicate that *rufigula* is not a very stable form. "In four males from Bura and Voi and one from Kitui the throat and breast are red, as in *P. franciscana pusilla*, but they have, of course, not got the long upper tail-coverts, and most of the other males show red feathers on the throat and upper breast, while two are almost undistinguishable from typical *nigriventris*." The present two specimens from much farther south are certainly *nigroventris* but both have a few feathers on the throat narrowly tipped with scarlet or orange. Bowen[3] writes that a Mombasa specimen has some flecks of red on the throat. The two forms are probably more closely related than their "specific" status would indicate, and they recall the case of *Colius-passer a. ardens* and *C. a. concolor*.

The Kilosa male is in a very advanced stage of the prenuptial molt; the Morogoro male is in worn breeding plumage.

According to Vaughan[4] the breeding season in Zanzibar and Pemba is in May and June, and again in November. Bowen obtained nestlings at Mombasa on August 19. In Tanganyika Territory Schuster[5] found the breeding season to be from February to May. The postnuptial molt commences early in June.

Delacour and Edmond-Blanc[6] have recently monographed this and the other species of the genus.

### Euplectes hordeacea sylvatica (Neumann)

*Pyromelana flammiceps sylvatica* Neumann, Journ. f. Ornith., 1905, p. 345: Jaunde, Cameroon.

1 ♂, Mwanza, Tanganyika Territory, 13 December 1923.

This bird is in a very early stage of the prenuptial molt and is therefore difficult to identify subspecifically. On the whole it seems to be nearer to *sylvatica* than to *changamwensis*. It constitutes a definite extension of range eastward for *sylvatica*.

[1] Syst. Avium Aethiop., part ii, 1930, p. 759.
[2] Nov. Zool., vol. **29**, 1922, p. 149.
[3] Proc. Acad. Nat. Sci. Phil., **83**, 1931, pp. 75–76.
[4] Ibis, 1929, p. 583.
[5] Journ. f. Ornith., 1926, p. 724.
[6] L'Oiseau, **3**, 1933, pp. 546–547.

### Euplectes hordeacea changamwensis (Means)

*Pyromelana flammiceps changamwensis* Mearns, Smiths. Misc. Coll., **61**, no. 11, 1913, p. 5: Changamwe, near Mombasa.

1 ♂, 2 ♀, Morogoro, Tanganyika Territory, 13–29 March 1917.
1 ♂, Morogoro, Tanganyika Territory, 20 November 1917.

These birds are *changamwensis* and not *sylvatica*. They constitute an extension inland of the range of this otherwise coastal form.

One of the "females" is probably a male as it is acquiring black wings and tail. The other female is much yellower on the throat, breast, sides, and flanks, and a little less grayish brown above. The March male is in breeding plumage; the November one is in winter dress.

The coastal fire-crowned bishop occurs from Malindi, Changamwe, etc., in Kenya Colony, south along the Tanganyika coast (including the islands of Zanzibar and Pemba). The exact southern limits are not known. It may be that the bird occurs farther north than hitherto supposed. Zedlitz[1] lists "*Pyromelana flammiceps flammiceps*" from Heleschid, southern Somaliland. Whatever this specimen may be, it is not typical *hordeacea* (of which *flammiceps* is a synonym), and the chances are that it is nearer to *changamwensis* than to any other form.

The breeding season, in Zanzibar and Pemba, is from January to April, according to Vaughan.[2] Schuster[3] found a nest with 3 eggs at Morogoro on 16 March. He noted the birds over a wide area.

### Euplectes capensis zambesiensis (Roberts)

*Xanthomelana zanthomelas zambesiensis* Roberts, Ann. Transv. Mus., **8**, 1922, p. 266: Villa Pereira, Boror, Mozambique.

1 ♂, 1 ♀, Morogoro, Tanganyika Territory, 23 March, 2 July, 1917.
1 ♂, Kilosa, Tanganyika Territory, 5 January 1921.

"Also Dar es Salaam; Bagilo, Uluguru Mountains; Ilonga; and Dodoma." (A.L.)

The Kilosa specimen was in the midst of its prenuptial molt when shot; the Morogoro male is in worn breeding plumage; the female is also somewhat worn.

*P. c. litoris* Neunzig is a synonym of *zambesiensis*. The Morogoro

[1] Journ. f. Ornith., 1916, p. 26.
[2] Ibis, 1930, pp. 45–46.
[3] Journ. f. Ornith., 1926, p. 724.

birds are topotypes of *litoris* but agree in all details with comparable material from southern Mozambique (Inhambane). In the original description of *litoris*[1] Neunzig says it is smaller than *zambesiensis;* this I do not find to be so, but it must be admitted that my material of both races has been scanty (3 of "*litoris,*" and 2 of typical *zambesiensis* and 11 *zambesiensis* from Nyasaland).

The range of *zambesiensis* is as follows: Mozambique, the lower Zambesi Valley, Nyasaland, north through coastal and south-central Tanganyika Territory to Dodoma, Morogoro, Kilosa, and Tanga. Females from Nyasaland are less darkly streaked on the breast than the present one from Morogoro, but this is probably individual and not of geographic significance.

Schuster[2] found this bird commonly in many places, but also absent in others, as, for example, on the Rufiji River where he never saw it. He writes that the males assume nuptial dress in December and that the breeding season is from February to May.

### Euplectes taha intercedens (Erlanger)?

*Pyromelana taha intercedens* Erlanger, Orn. Monatsb., **11**, 1903, p. 23: Djille, Arussi Gallaland.

1 ♂, 1 ♀, Kinyambwa, Dodoma, Tanganyika Territory, 12 April 1922.

All in all Loveridge obtained 5 specimens of this bird at Kinyambwa, 3 of which are preserved in other museums.

This is the first time this species has been recorded from Tanganyika Territory, and the subspecific identity of the present specimens is open to question. The species was previously known from South Africa north to Mozambique and Nyasaland and from Ethiopia south to Lake Baringo and Eldama Ravine in Kenya Colony. I have not enough comparative material to be absolutely certain of the identification to be followed. If these birds are *intercedens*, they extend the range southward from Arussi-Gallaland over about 900 miles of some of the most thoroughly explored country in eastern Africa, and in much of which it is safe to say the species does not occur. The birds are clearly not *taha* of southern Africa or *ladoensis* of the southern Sudan.

The present female is very dark, with broad fuscous black streaks edged with gray, not with brown, above; has white superciliaries

[1] Zool. Anzeig., **78**, 1928, p. 114.
[2] Journ. f. Ornith., 1926, p. 725.

yellow in the anterior portions; the underparts are whiter than in a female of *taha* and the breast is marked with yellow, not washed with tawny as in *ladoensis*. The central Tanganyikan birds may well be an undescribed race.

The dimensions of the two specimens are as follows: male—wing 59, tail 33, culmen 13; female—wing 59, tail 31, culmen 13 mm. The female is in worn plumage; the male is in somewhat abraded breeding dress.

Van Someren has recently[1] recorded *ladoensis* from Eldama Ravine and from Lake Rudolf, and states that the, " . . . record of the race *intercedens* from Baringo probably refers to this race." While these data help to bridge the enormous gap between the Dodoma birds and those of the Sudan and Ethiopia, still I feel that the Tanganyikan specimens are not *ladoensis*, and perhaps not *intercedens* either.

### Urobrachya axillaris phoenicea (Heuglin)

*Coliuspasser phoeniceus* Heuglin, Journ. f. Ornith., 1862, p. 304: Sobat River, Sudan.

1 ♂, 1 ♀, Masomunta Mukubwa, Ruanda, Uganda, 26 September 1919.
1 ♂, Kome Island, Mwanza, Tanganyika Territory, 22 November 1922.

*U. a. media* Sharpe, and *U. a. neumanni* Neunzig are regarded as synonyms. A number of authors maintain that *media* is valid, but I follow Sclater's arrangement[2] as I have not the material wherewith to form an opinion of my own.

The present form occurs from the Nile Valley in the Sudan (and northeast to Sennar), south through Uganda to western Kenya Colony, the eastern Belgian Congo, and the adjacent parts of Tanganyika Territory (south to Mwanza and Umbugwe). As mentioned under *zanzibarica*, there is one uncertain record from Uhehe.

The September male and female are in fresh nuptial plumage; the November male is in worn breeding dress.

### Urobrachya axillaris zanzibarica Shelley

*Urobrachya zanzibarica* Shelley, Proc. Zool. Soc. Lond., 1881, p. 586, pl. xxx, fig. 1: type in Brit. Mus. from Malinda, that is, Malindi, Kenya Colony.

2 ♂, 2 ♀, Tindiga, Kilosa, Tanganyika Territory, 24 January 1922.

[1] Nov. Zool., **37**, 1932, p. 323.
[2] Syst. Avium Aethiop., part ii, 1930, p. 764.

One of the males is molting into breeding plumage; the other is in full nuptial dress.

This race of the fan-tailed widow bird is chiefly coastal in its range, occurring from Lamu in Kenya Colony south to the Rufiji River in Tanganyika Territory. It gets inland to the Usambara Mountains and Kilosa. Schuster[1] records a specimen listed as "*phoenicea,*" from Uhehe. I do not know if Uhehe is inhabited by *zanzibarica,* by *axillaris* or by *phoenicea.*

*U. a. zanzibarica* is distinguished from *phoenicea* by its larger bill.

*U. hildebrandti* Sharpe and *U. nigronotata* Sharpe are synonyms of *U. a. zanzibarica.*

### Coliuspasser albonotatus albonotatus (Cassin)

*Vidua albonotata* Cassin, Proc. Acad. Nat. Sci., Phil., **4**, 1848, p. 65: Port Natal, that is, Durban.

1 ♂, Muhalala, Dodoma, Tanganyika Territory, 13 March 1922.

"Also Mahaka." (A.L.)

The single specimen here listed is in worn breeding plumage.

Sclater[2] gives the northern limits of the range of *albonotatus* as the Rovuma River and Nyasaland, but it occurs north to Dodoma in Ugogo. In the last named area it meets with (but, as far as I know, does not intergrade with) *eques.*

### Coliuspasser albonotatus eques (Hartlaub)

*Vidua eques* Hartlaub, Proc. Zool. Soc. Lond., 1863, p. 106, pl. xv: Kaseh, that is, Tabora, Tanganyika Territory.

2 ♂, 1 ♀, Nairobi, Kenya Colony, 22 May 1919 and 7 September 1920.

The September specimen is in prenuptial molt; the May birds were a mated, breeding pair.

This race of the white-winged whydah occurs in most of Kenya Colony (except the coastal and arid areas), Uganda and adjacent parts of the eastern Congo, and in northern Tanganyika Territory. The breeding male has the upper lesser wing coverts chestnut brown, instead of yellow as in *albonotata.*

The breeding season appears to be very prolonged and irregular.

[1] Journ. f. Ornith., 1926, p. 725.

[2] Syst. Avium Aethiop., part ii, 1930, p. 766.

### Coliuspasser ardens ardens (Boddaert)

*Fringilla ardens* Boddaert, Tabl. Pl. Enlum., 1783, p. 39: Cape of Good Hope, ex Pl. Enl. 647.

2 ♂, Morogoro, Tanganyika Territory, 23 May and 4 June, 1917.
1 ♀, Rukaya, Mawokota, Uganda, 2 November 1919.

"Also Kilosa and Kome Island." (A.L.)

I have examined a number of specimens from Tanganyika Territory and also from South Africa and find Reichenow's form *tropica*[1] to be untenable. The chief character of *tropica* is the color of the throat band which is supposed to be more reddish, less orange than in *ardens*. One of the present males has a deep scarlet throat collar; the other has an orange one.

The cut-throat whydah occurs from eastern South Africa north to north-central Tanganyika Territory, Uganda, and the eastern and southern Belgian Congo, and Rhodesia. Sclater[2] does not mention Tanganyika Territory in its range, but Schuster[3] and others have noted it from several Tanganyikan localities, to say nothing of the fact that *tropica* was described from that country.

The breeding season in Tanganyika Territory is from January to June, according to Schuster.

### Coliuspasser ardens suahelica (van Someren)

*Penthetria laticauda suahelica* van Someren, Bull. Brit. Orn. Cl., **41**, 1921, p. 121: Nairobi River.

1 ♂, 1 ♀, Nairobi, Kenya Colony, 1 May 1919.

The Kenya red-naped whydah is a common bird throughout the interior of Kenya Colony. In the coastal districts it is replaced by *teitensis*, which in turn, is very similar to typical *ardens*.

Both specimens are in breeding plumage. The nesting season is rather indefinite and prolonged.

This race differs from *ardens* in that the breeding male plumage has a red crown and nape connected postauricularly with the throat band, while in the nominate form only the throat band is red.

[1] Vög. Afr., **3**, 1904, p. 135: type from Karema, Tanganyika Territory.
[2] Syst. Avium Aethiop., part ii, 1930, p. 767.
[3] Journ. f. Ornith., 1926, p. 726.

### Drepanoplectes jacksoni Sharpe

*Drepanoplectes jacksoni* Sharpe, Ibis, 1891, p. 246, pl. v: Masailand, near Lake Nakuru.

2 ♂, Nairobi, Kenya Colony, 1 May 1919.

One male is in full nuptial plumage; the other is in fairly fresh off-season dress.

Jackson's whydah inhabits the grassy areas of the high interior of Kenya Colony from Kikuyu to Nandi north to Lake Baringo and Mt. Kenya.

The breeding season is in May, June, and July.

### Spermestes cucullatus scutatus Heuglin

*Spermestes scutatus* Heuglin, Journ. f. Ornith., 1863, p. 18: Dembea, Ethiopia.

3 ♀, Nairobi, Kenya Colony, 7 October 1915.
1 ♂, 1 ♀, Morogoro, Tanganyika Territory, 11 June 1917.
1 ♂, 1 ♀, Dar es Salaam, Tanganyika Territory, 7 June 1918.
1 ♂, 1 ♀, Lumbo, Mozambique, 31 July 1918.

"Also Kilosa, Tumutumu, Tabora, and Kabare." (A.L.)

The Ethiopian bronze mannikin is common and widely distributed throughout the regions represented in the present collection, except in Uganda, where it is replaced by the nominate form.

Three of these birds are young (one each from Morogoro, Dar es Salaam, and Nairobi).

At Kakoma and Zanzibar Böhm found nests with eggs and young from the middle of April to the end of May. Schuster[1] writes that in Central Tanganyika Territory the birds breed throughout the year. He found nests in September, March, and April. In Nyasaland Belcher[2] writes that some birds nest as early as August but most wait for the rains. He found nests with eggs as late as May.

### Spermestes bicolor stigmatophorus Reichenow

*Spermestes stigmatophorus* Reichenow, Journ. f. Ornith., 1892, p. 46: Bukoba, Lake Victoria.

1 ♂, 1 ♀, Chantwara, Bukoba, Tanganyika Territory, 5–7 January 1923.

"Also Kabare, Bukoba." (A.L.)

[1] Journ. f. Ornith., 1926, p. 726.
[2] Birds of Nyasaland, 1930, p. 325.

These specimens are practically topotypical of *stigmatophorus*, which is a rather doubtful form. It differs from *poensis* in being slightly browner, less glossy on the back. However, it may be noted that specimens of this race may be browner, as van Someren[1] even suggests considering *stigmatophorus* and *nigriceps* conspecific, " . . . most *S. stigmatophorus* showing a strong brownish tinge on the mantle."

This bird occurs in the clearings and around the edges of the forests in Uganda and adjacent parts of the Congo, Kenya Colony, and Tanganyika Territory. It seems to be less numerous than *S. cucullata cucullata* but has similar habits and habitat preferences.

### Spermestes nigriceps nigriceps Cassin

*Spermestes nigriceps* Cassin, Proc. Acad. Nat. Sci. Phil., for 1852, p. 185: Zanzibar.

1 ♂, 1 ♀, Ngong, Kenya Colony, 23 July 1919.

"Also Morogoro and Kilosa." (A.L.)

These two specimens are in worn plumage.

The rufous-backed mannikin occurs throughout the eastern territories under consideration in this paper, but its range does not extend to Uganda. It is the least abundant of the species of its genus, but is widespread and not uncommon.

The birds probably breed throughout the year. A nest was found in July near Mombasa by Hildebrandt and Kalkreuth.

### Amauresthes fringilloides (Lafresnaye)

*Ploceus fringilloides* Lafresnaye, Mag. Zool., 1835, pl. xlviii: "India;" Liberia, *apud* Hartlaub, Syst. Orn. Westafr. p. 147.

1 ♂, 1 ♀, Kilosa, Tanganyika Territory, 26 April 1922.

"This bird is considered rare and I never came across it until April 1922 when a perfect specimen was picked up dead near a water tank without any signs of injury. I showed it to my collector and told him to spend the day searching for others, but not to kill more than half-a-dozen. He returned a few hours later with these saying he had met with the birds near a wall in a maize plot and could have obtained more than the half-dozen if he had wished." (A.L.)

[1] Nov. Zool., **29**, 1922, p. 154.

These two specimens are paler on the upper back and slightly less deep brownish on the wings and lower back than a lone female from Liberia (topotypical *fringilloides*). Whether or not the eastern birds are separable is a matter that requires much more material to decide.

The magpie mannikin occurs throughout Mozambique, Nyasaland, and Tanganyika Territory, and in southeastern Kenya Colony, west (not in the interior of Kenya Colony or in Uganda) to Senegal. It is nowhere very numerous, but Roehl was able to obtain no fewer than 36 specimens during his residence in the western slopes of the Usambara range.[1]

Fischer found a nest with six eggs in Zanzibar. Belcher[2] found a nest on March 27 in Nyasaland.

### Euodice cantans meridionalis (Mearns)

*Aidemosyne cantans meridionalis* Mearns, Smiths. Misc. Coll., **61**, no. 14, 1913, p. 4: Indunumara Mountains, Kenya Colony.

1 ♂, 1 ♀, Kinyambwa, Dodoma, Tanganyika Territory, 8 April 1922.

These specimens appear to constitute a new southern extension of the known range of the Kenya silver-bill. Previously it was known only from as far south as the Kilimanjaro region (Donya Ngai) and from Zanzibar.

*E. c. taveteusis* van Someren appears to be a synonym of *meridionalis*. If it were distinct, the present specimens would have to be identified as *taveteusis*, both because of geography, and because of their white underparts. The supposed characters of dorsal coloration and chin spots do not seem to hold good.

### Odontospiza caniceps (Reichenow)

*Pitylia caniceps* Reichenow, Orn. Centralbl., **4**, 1879, p. 139: Massa, Tana River.

1 ♂, 1 ♀, Kinyambwa, Dodoma, Tanganyika Territory, 7 April 1922.

"Also Shanwa." (A.L.)

The gray-headed silver-bill occurs from central Tanganyika Territory north through the interior of Kenya Colony to southern Shoa,

[1] Recorded by Grote, Journ. f. Ornith., 1921, p. 128.
[2] Birds of Nyasaland, 1930, pp. 326–327.

northern and northwestern Uganda. It is nowhere common and its habits are largely unknown.

The female is a young bird and has no white spots on the chin, upper throat, and cheeks.

The male is molting the tail feathers and is otherwise in rather worn plumage.

These specimens agree with others from Kilimanjaro, Kenya Colony, and Shoa.

### Nigrita canicapilla schistacea Sharpe

*Nigrita schistacea* Sharpe, Ibis, 1891, p. 118: Sotik, Kenya Colony.

1 ♀, Chantwara, Bukoba, Tanganyika Territory, 26 December 1922.
1 ♂, Bukoba, Tanganyika Territory, 12 January 1923.

"Also Kabare, Bukoba." (A.L.)

These specimens are topotypes of *N. sparsimguttata* Reichenow[1] but are not different from Kenyan examples of *schistacea*. Gyldenstolpe[2] recognizes *sparsimguttata* rather hesitantly; Sclater[3] considers it a synonym of *schistacea*.

The present form of the gray-headed negro-finch occurs throughout Uganda (west to Ruwenzori) and the eastern Ituri district, Belgian Congo, east to northwestern Tanganyika Territory and to western Kenya Colony, to the western escarpment of the Rift Valley. East of the Rift Valley, it is replaced by *diabolica*, a race with less whitish on the crown, and with the white marks on the upper wing coverts less like round spots, more like transverse terminal bars.

The specimens here listed are in slightly worn plumage.

This bird lives in the forests and in the clearings.

### Cryptospiza reichenowi sanguinolenta Vincent

*Cryptospiza reichenowi sanguinolenta* Vincent, Bull. Brit. Orn. Cl., **53**, 1933, p. 148: Mlanje Mountain, southern Nyasaland.

1 ♂, 1 ♀, Uluguru Mountains, Tanganyika Territory, 14 May 1921.
1 ♀, Bagilo, Uluguru Mountains, Tanganyika Territory, 5 May 1922.

The present specimens are in somewhat abraded plumage.

This race is known to inhabit the mountains of Tanganyika Terri-

[1] Journ. f. Ornith., 1892, p. 132.
[2] Kungl. Sv. Vet. Akad. Handlygr., 1924, p. 52.
[3] Syst. Avium Aethiop., part ii, 1930, p. 775.

tory (Usambara; Uluguru; Uzungwe; Ukinga; and Poroto Mountains); and of Mozambique north of the Zambezi (Cholo Mt.; Namuli Mt.); and the Mlanje Mountain of Nyasaland.

### Cryptospiza salvadorii subsp. nov.?

1 ♀, Mbeta, Uluguru Mountains, Tanganyika Territory, 24 July 1922.

This single specimen is obviously *C. salvadorii* and not *C. reichenowi*, but it does not fit any of the races of the former. Sclater[1] does not record the species from Tanganyika Territory at all, but Shelley[2] notes that, " . . . in its most southern range the species has been met with by Dr. Stuhlmann at Uluguru."

The bird is darker below than *ruwenzori*, but is olive-green, not brown as in the Nyasaland form *australis*. It may belong to a hitherto unknown race intermediate between these two, but more material is needed to make certain of this. For the present the bird may best be designated as above, and its absolute determination left for a more propitious occasion.

The bird is in fairly fresh plumage; the amount of red on the lower back is intermediate between *borealis* and *ruwenzori;* the crown is duskier olive green than in most specimens of either of these. The wing is short, only 50 mm., as against 55–56 mm., in females of *ruwenzori* and 56 mm., in *borealis*.

### Pirenestes minor minor Shelley

*Pyrenestes minor* Shelley, Ibis, 1894, p. 20: near Zomba.

1 ♂, Uluguru Mountains, Tanganyika Territory, 26 May 1921.
1 ♂, Bagilo, Uluguru Mountains, Tanganyika Territory, 30 May 1922.

The range of the Nyasaland seed-cracker is from Beira, Mozambique, to Nyasaland and to the Uluguru Mountains. In the last named locality it meets with the large-billed race *frommi*. Probably the latter inhabits the more open country while *minor* lives in the moister forested areas. Aside from the Uluguru range it is known from only one other Tanganyikan locality—Sanji, Mahenge.

Belcher[3] writes as though the adult male has the back, wings, middle

[1] Syst. Avium Aethiop., part ii, 1930, pp. 779–780.
[2] Birds Afr., **4**, 1905, p. 277.
[3] Birds Nyasaland, 1930, pp. 327–328.

of abdomen, and under wing and tail coverts, black, but in this he is mistaken, as *minor* is a brown and red, not a black and red, plumaged species.

### Pirenestes minor frommr Kothe

*Pyrenestes minor frommi* Kothe, Orn. Monatsb., **19**, 1911, p. 70: Kitungulu, Urungu.

1 ♂, Uluguru Mountains, Tanganyika Territory, 16 May 1921.

The Uluguru Mountains are the northernmost area where the large-billed form of *P. minor* occurs. This specimen was at the Tring Museum where Chapin examined the series there and is mentioned by him[1] in his paper—" . . . *P. m. minor* likewise occurs in the same mountains, as shown by a young bird . . . secured by Loveridge. So the distribution of these two races of the East African species offers a problem at least as complex as in the case of *P. ostrinus*. That the small-billed race here again inhabits more wooded districts is probable at least, for Claude Grant, who collected it near Beira, tells us: 'It frequents densely wooded localities . . .' . . ." Chapin points out that if additional collecting from the southern end of Lake Tanganyika should, " . . . reveal only adults of the *ostrinus* collection, then *frommi* would probably become a synonym of *ostrinus* or replace *maximus*, and the large race of *minor* would require renaming."

The bird is in fairly worn plumage.

### Amadina fasciata alexanderi Neumann

*Amadina fasciata alexanderi* Neumann, Bull. Brit. Orn. Cl., **23**, 1908, p. 43: Waram, Hawash River.

2 ♂, Dar es Salaam, Tanganyika Territory, 24 June 1918.
1 ♂, 1 ♀, Kinyambwa, Dodoma, Tanganyika Territory, 8 April 1922.

*A. f. candida* is so very slightly marked as a race that I now consider it identical with *alexanderi*. The Dar es Salaam birds are browner above than those from Dodoma, but this may be due partly to wear as the former specimens are in fresh plumage and the latter are in abraded feathering.

The cut-throat finch occurs in the northern half of Tanganyika Territory, Kenya Colony, Ethiopia, Somaliland, and Eritrea.

[1] Bull. Amer. Mus. Nat. Hist., **49**, 1924, pp. 430, 441.

### Ortygospiza atricollis dorsostriata van Someren

*Ortygospiza atricollis dorsostriata* van Someren, Bull. Brit. Orn. Cl., **41**, 1921, p. 115: s. Ankole.

1 ♂, Kabare, Bukoba, Tanganyika Territory, 13 January 1923.

I have seen no material of *O. a. ugandae* and so follow Sclater[1] in considering it a synonym of *dorsostriata*. Van Someren[2] writes that *ugandae* has white around the eye and on the chin, while *dorsostriata* has no white there. However, there seems to be some variation in this character, as van Someren writes that males of the present race have a little white on the chin, but not around the eye. The present specimen has no white in either place.

*O. a. ugandae* was described from Mumias, North Kavirondo, Kenya Colony. Therefore, if it is to be synonymized with *dorsostriata*, the range of the latter must be extended eastward to the Mumias region. Sclater has forgotten to do this and gives merely, "Western Uganda, including Ankole and Toro." It should also be extended to include extreme northwestern Tanganyika Territory. On the other hand, *ugandae* may be looked upon as nearer to *mülleri* (it appears to be a group of intermediates between *dorsostriata* and *mülleri*), and the disposition of the name may be a matter of opinion, some synonymizing it with *dorsostriata*, others with *mülleri*.

The present specimen is molting the rectrices and is otherwise in worn plumage.

A female in breeding condition was taken at Butiti, Uganda, on 2 October by van Someren.[3]

### Hypargos niveoguttatus (Peters)

*Spermophaga niveoguttata* Peters, Journ. f. Ornith., 1868, p. 133; Inhambane.

1 ♂, 1 ♀, Kilosa, Tanganyika Territory, 1 January and 12 February 1921. "Also Bungu and Morogoro." (A.L.)

Peter's twin-spot occurs sparingly and locally from Mozambique north throughout Tanganyika Territory to central Kenya Colony (Meru near Mt. Kenya). It also occurs in Nyasaland, Rhodesia and the Katanga.

[1] Syst. Avium Aethiop., part ii, 1930, p. 783.
[2] Nov. Zool., **29**, 1922, p. 155.
[3] Ibis, 1916, p. 424.

Sclater[1] writes that it occurs only in the coastal districts of Kenya Colony (Lamu and Teita) but the species ranges inland to Meru.

*H. n. macrospilotus* Mearns is a synonym (type examined and compared with birds from Mozambique, Gazaland, Nyasaland, and Tanganyika Territory).

### Pytilia afra (Gmelin)

*Fringilla afra* Gmelin, Syst. Nat., **1**, pt. 2, 1789, p. 905: Angola.

1 ♂, 2 ♀, Kilosa, Tanganyika Territory, 14 January, 18 January, 25 March 1921.

The yellow-backed pytelia occurs throughout the northern half of Mozambique, north through East Africa to southern Ethiopia, and west through Rhodesia and the southern Congo to northern Angola. It is local and uncommon everywhere.

The female collected on 25 March was shot off its nest which contained 4 eggs. Loveridge[2] published this nesting record, but recognized *P. a. cinereigula* at the time. This form does not seem to be valid and may therefore be discarded.

The present females are grayer below, less greenish or yellowish, than in Ethiopian birds; the present male has the hind crown and occiput more yellowish, less grayish than in comparable Ethiopian examples.

### Pytilia melba grotei Reichenow

*Pytelia melba grotei* Reichenow, Journ. f. Ornith., 1919, p. 227: Kionga, near mouth of Rovuma River, Tanganyika Territory.

1 ♀, Morogoro, Tanganyika Territory, 23 July 1917.
1 ♂, Lumbo, Mozambique, 6 August 1918.
1 ♂, 1 ♀, Kilosa, Tanganyika Territory, 14 January 1921.

The Lumbo specimen is a topotype and was collected at the same time as the type of *mosambica* van Someren; now considered as a synonym of *grotei*.

The Kilosa and Morogoro birds constitute the northernmost records for this race. The Morogoro female is in the "*percivali*" color phase with dark gray head and throat.

This race and *belli* come close together in central Tanganyika

[1] Syst. Avium Aethiop., part ii, 1930, p. 785.
[2] Proc. Zool. Soc. Lond., 1923, p. 903.

Territory:—*grotei* ranges along the coast and inland to Kilosa and Morogoro, while *belli* ranges from Uganda and northwestern Tanganyika Territory eastward to Dodoma, less than 100 miles west of Kilosa.

These specimens are in rather fresh plumage.

### Pytilia melba belli Ogilvie-Grant

*Pytelia belli* Ogilvie-Grant, Bull. Brit. Orn. Cl., **21**, 1907, p. 14: S. E. Ruwenzori; type from Mokia, Toro district, Uganda.

1 ♂, 1 ♀, Dodoma, Tanganyika Territory, 24 December 1918.

These specimens constitute an extension of the known range eastward as far as Dodoma.

The male has white lores as in the supposed species, *P. percivali* van Someren, but the female is in typical *belli* plumage. Both are somewhat abraded.

Lynes[1] found this weaver breeding in March in the Iringa district.

### Lagonosticta rubricata haematocephala Neumann

*Lagonosticta rubricata haematocephala* Neumann, Orn. Monatsb., **15**, 1907, p. 168: Songea, east (not north) of Lake Nyasa.

1 ♂, Kilosa, Tanganyika Territory, 14 January 1921.
1 ♀, Uluguru Mountains, Tanganyika Territory, 14 May 1921.

These specimens, neither of which is fully adult, appear to be best referred to *haematocephala*, although not quite typical of that race. They are of interest because of the locality. The form was previously known from Nyasaland, Gazaland, Mozambique, to coastal Tanganyika Territory and to the Katanga. The present examples are the first from the interior of north-central Tanganyika Territory. They are in somewhat worn plumage; the male is either subadult or wrongly sexed as it resembles the female in plumage.

### Lagonosticta rubricata taruensis van Someren

*Lagonosticta jamesoni taruensis* van Someren, Bull. Brit. Orn. Cl., **40**, 1919, p. 54: Tsavo.

2 ♂, Kilosa, Tanganyika Territory, 13 January 1921 and 17 September 1922.

[1] Journ. f. Orn., **82**, 1934, Sonderheft, p. 124.

Sclater[1] considers *taruensis* a race of *L. rubricata*. While I follow him in this regard, I am not at all certain that he is correct. The fact that these specimens were taken in the same place as some of *L. r. haematocephala* indicates that the two may well be specifically distinct. The color of the back in *taruensis* and *jamesoni* is so different from that in *hildebrandti*, *haematocephala*, etc., that it would be not unnatural to consider the reddish backed birds one species (*jamesoni*) and the olive-brown backed forms, another species (*rubricata*). If they are all kept as one specific unit, then the ranges of *taruensis* and *haematocephala* meet in the Kilosa area.

The present race has the back even more reddish than in *jamesoni*, almost as much so as in *senegala*.

One of the birds is immature and is much more brownish, less reddish generally above and below.

### Lagonosticta senegala kikuyuensis van Someren

*Lagonosticta senegalla kikuyuensis* van Someren, Bull. Brit. Orn. Cl., **40**, 1919, p. 55: Nairobi.

1 ♀, Tumutumu, Kenya Colony, 20 October 1920.
1 immature unsexed, Kilosa, Tanganyika Territory, 22 February 1922.

The adult specimen obtained is in poor plumage.

This fire-finch occurs commonly throughout the interior of Kenya Colony from the Mt. Kenya area south to the Kilosa district, Tanganyika Territory.

The Kilosa bird is unfortunately immature, but seems to fit *kikuyuensis* better than any other race, although it is slightly intermediate between that form and *somaliensis*. It extends the known range of *kikuyuensis* southwards by about 250 miles.

The species breeds throughout the year.

### Lagonosticta senegala somaliensis Salvadori

*Lagonosticta somaliensis* Salvadori, Mem. Accad. Torino, **44**, 1894, p. 557: Somaliland.

1 ♂, 1 ♀, Morogoro, Tanganyika Territory, 2 April and 6 September 1917. "Also 5 birds from Dar es Salaam." (A.L.)

The "male" is probably a female as it has the plumage of that sex.

[1] Syst. Avium Aethiop., part ii, 1930, p. 789.

These birds constitute an extension of range for *somaliensis* which was previously known only as a coastal bird in northeastern Tanganyika Territory. They are not wholly typical, but show a very slight approach towards *kikuyuensis* but are much nearer the former.

### Lagonosticta senegala rendalli Hartert

*Lagonosticta senegala rendalli* Hartert, Nov. Zool., **5**, 1898, p. 72: Upper Shiré River.

Loveridge collected five of these fire-finches at Lumbo, Mozambique, for the Nairobi Museum, where they now are.

### Coccopygia melanotis kilimensis Sharpe

*Coccopygia kilimensis* Sharpe, Cat. Birds Brit. Mus., **13**, 1890, p. 307: Kilimanjaro.

1 ♂, 1 ♀, Morogoro, Tanganyika Territory, 2 July 1917.
1 ♀, Uluguru Mountains, Tanganyika Territory, 28 May 1921.

"Also Nairobi, Bagilo, and Kilosa." (A.L.)

The Kenya yellow-bellied waxbill occurs in suitable areas throughout the regions under discussion in this report, except Uganda and adjacent portions of the eastern Belgian Congo, northwestern Tanganyika Territory and the north Kavirondo country of western Kenya Colony, in which areas a paler race, *nyanzae*, replaces it.

The present specimens are in somewhat worn plumage. They have rather short wings, but are matched in this regard by some birds from Kilimanjaro (topotypes).

In Nyasaland Belcher[1] found it nesting in February and March.

### Estrilda astrild minor (Cabanis)

*Habropyga minor* Cabanis, Journ. f. Ornith., 1878, p. 229: Voi River, Kenya Colony.

1 adult ♀, Uluguru Mountains, Tanganyika Territory, 28 May 1921.
1 adult ♂, 1 juvenal ♀, Bungu, Usambara Mountains, Tanganyika Territory, September 1921.
1 adult ♀, Bagilo, Uluguru Mountains, Tanganyika Territory, 22 May 1922.

[1] Birds Nyasaland, 1930, p. 332.

The Bagilo bird is dark above and approaches the Nyasaland form, *cavendishi*.

I have seen no material of Grote's form, *litoris*, described from the mouth of the Ruvu River[1] and therefore accept Sclater's disposition of it as a synonym of *minor*.[2]

### Estrilda astrild massaica Neumann

*Estrilda astrild massaica* Neumann, Journ. f. Ornith., 1907, p. 596: Njoro, Kenya Colony.

1 ♂, 1 ♀, Nairobi, Kenya Colony, 28 September 1920.

This is the common waxbill of the interior of the southern half of Kenya Colony. It differs but slightly from the coastal form *minor*, but has the chin and cheeks slightly less whitish than the latter race.

Both specimens are in worn plumage.

The breeding season is from March to July and from November to January.

### Estrilda astrild nyanzae Neumann

*Estrilda astrild nyanzae* Neumann, Journ. f. Ornith., 1907, p. 596: Bukoba, Lake Victoria.

1 ♂, 1 ♀, Kabura, Mawokota, Uganda, 25 August 1919.
1 ♂, 1 ♀, Buchosa, Bukoba, Tanganyika Territory, 30 November 1922.

The Uganda waxbill differs from *massaica* in having the underparts more suffused with pinkish, the bars obsolete on the breast, the upperparts slightly more grayish, less brownish, and in being larger.

The November specimens are in worn plumage; the August birds are in fairly fresh feathering.

This bird is very common in Uganda where it breeds from March to July and from November to January.

### Estrilda subflava clarkei (Shelley)

*Coccopygia clarkei* Shelley, Bull. Brit. Orn. Cl., **13**, 1903, p. 75: Richmond Road, Natal.

1 ♂, Morogoro, Tanganyika Territory, 30 November 1918.
1 ♂, 1 ♀, Nairobi, Kenya Colony, 29 September 1920.
1 ♀, Kilosa, Tanganyika Territory, 12 January 1921.

[1] Journ. f. Ornith., 1919, p. 301.
[2] Syst. Avium Aethiop., part ii, 1930, p. 795.

The southern zebra waxbill occurs, in the territories under consideration in this report, in Mozambique, Tanganyika Territory, and Kenya Colony. In Uganda it is replaced by the nominate race.

The birds breed more or less throughout the year, although chiefly from January to August. Occasionally the birds use old nests of other species, but more frequently they build for themselves.

### Estrilda roseicrissa roseicrissa Reichenow

*Estrilda roseicrissa* Reichenow, Journ. f. Ornith., 1892, p. 47: Bukoba.

1 unsexed, Kabura, Mawokota, Uganda, 20 August 1919.

The rosy-flanked waxbill occurs in western Uganda, and northern Tanganyika Territory south to the Kivu district.

The single specimen obtained has the crown and occiput more grayish than the back, while two from Nyanza on the northeastern shore of Lake Tanganyika have the head brownish, concolorous with the back. It therefore appears that the present bird is subadult. Gyldenstolpe[1] describes a similar subadult bird.

### Estrilda nonnula nonnula Hartlaub

*Astrilda nonnula* Hartlaub, Journ. f. Ornith., 1883, p. 425: Kudurma, Bahr el Ghazal.

1 ♀, Chantwara, Bukoba, Tanganyika Territory, 26 December 1922.
1 ♂, Kabare, Bukoba, Tanganyika Territory, 17 January 1923.

The black-crowned waxbill occurs in the western parts of Kenya Colony and of northern Tanganyika Territory, west through the northern Congo and southern Sudan to Cameroon.

Van Someren[2] writes that birds from, " . . . South Elgon are rather whiter below, not tinged with creamy, and have the breast and flanks more washed with grayish . . . " I have seen a number of specimens from Kaimosi and find them similar to others from Bukoba, and from Ruwenzori and from the Lualaba.

In Uganda this bird is fairly common in the native *shambas,* in the coffee plantations, and in the wooded grasslands. It breeds throughout the year.

[1] Kungl. Sv. Vet. Akad. Handlngr., 1924, p. 61.
[2] Nov. Zool., **29**, 1922, p. 164.

### Estrilda erythronotos delamerei Sharpe

*Estrilda delamerei* Sharpe, Bull. Brit. Orn. Cl., **10**, 1900, p. 102: Athi River, Kenya Colony.

1 ♂, Mahaka, Dodoma, Tanganyika Territory, 24 March 1922.
1 ♀, Kome Island, Mwanza, Tanganyika Territory, 22 November 1922.

The Kenya black-cheeked waxbill presents an anomaly in its distribution, being separated by about 700 miles from its conspecific ally, *E. e. erythronotos*. In the vast intermediate area other Estrildas occur in abundance; localities apparently suitable to its needs are by no means wanting, yet the species is absent.

Sclater[1] gives the range of *delamerei* as the "drier parts of Kenya Colony from the Loita Plains to the Athi River," but the bird occurs south to the Ugogo and Unyamwezi districts in Tanganyika Territory, as was pointed out by Shelley.[2] In the west it reaches to Ankole.

The present specimens are in rather worn plumage.

### Estrilda charmosyna kiwanukae van Someren

*Estrilda charmosyna kiwanukae* van Someren, Bull. Brit. Orn. Cl., **40**, 1919, p. 55: Mbuyuni, Teita district, Kenya Colony.

1 ♀, Mahaka, Dodoma, Tanganyika Territory, 24 March 1922.

This specimen appears to be the southernmost record for the species and the first one for Tanganyika Territory. Previously the race was known only from southern Kenya Colony from the Loita Plains to the Teita-Taveta area (where it probably crosses the boundary into Tanganyika Territory).

The present example is in worn plumage. Its dimensions are as follows: wing 50.5, tail 49.5, culmen 9.0, tarsus 12.5 mm.

### Uraeginthus bengalus brunneigularis Mearns

*Uraeginthus bengalus brunneigularis* Mearns, Smiths. Misc. Coll., **61**, no. 20, 1911, p. 6: Wambugu, near Mt. Kenya.

1 ♂, Kilosa, Tanganyika Territory, 14 January 1921.

This specimen agrees with *brunneigularis* (or also with *ugandae*, as

[1] Syst. Avium Aethiop., part ii, 1930, p. 802.
[2] Birds Africa, **4**, 1905, p. 231.

adult males of the two forms are indistinguishable) and not with *ugogoensis*. It constitutes a great extension southward of the known range of the race and the first record for Tanganyika Territory.

### Uraeginthus bengalus ugogoensis Reichenow

*Uraeginthus bengalus ugogoensis* Reichenow, Mitt. Zool. Mus. Berlin, **25**, 1911, p. 228: Ugogo; type in Berlin Museum from Mdaburo.

1 ♂, Mombasa, Kenya Colony, 31 May 1918.

I follow Sclater[1] in considering *littoralis* van Someren a synonym of *ugogoensis*. The present specimen is a fully adult male in fairly fresh plumage, and agrees with others from Changamwe.

### Uraeginthus angolensis niassensis Reichenow

*Uraeginthus angolensis niassensis* Reichenow, Mitt. Zool. Mus. Berlin, **5**, 1911, p. 228: Songea, east (not north) of Lake Nyasa.

1 ♂, 1 ♀, Morogoro, Tanganyika Territory, 3 August and 29 October 1917.
1 ♂, 1 ♀, Lumbo, Mozambique, 8 August 1918.
1 ♀, Kilosa, Tanganyika Territory, 14 January 1921.
1 ♂, 1 ♀, Kinyambwa, Dodoma, Tanganyika Territory, 10 April 1922.

> "Also Dar es Salaam. The species was common at Kilosa where these birds were in the habit of coming to the verandah of the house during the dry season in search of water. Several of them would perch round the rim of an enamel plate and take turns at bathing and drinking while I was sitting within a yard of them." (A.L.)

The birds from Kilosa and Kinyambwa are much paler blue than those from Lumbo. The male from Morogoro is intermediate in this respect. A male from Zomba, Nyasaland, is similar to the one from Morogoro. I have seen no topotypical *niassensis* and therefore cannot progress very far in this matter, but may suggest that it looks as though two races are here involved. The birds of the arid Dodoma-Kilosa area are different from those of Zomba and Lumbo. Which one requires naming is a point that cannot be decided without typical *niassensis* for comparison. Grote's form, *mikindaniensis*[2] may prove to be the dark race. However, in the description of this subspecies no

[1] Syst. Avium Aethiop., part ii, 1930, p. 804.
[2] Orn. Monatsb., **19**, 1911, p. 162: Mikindani, s. e. Tanganyika Territory.

mention is made of the blue color, but merely that of the back is said to be more grayish, less reddish, brown than in *niassensis*. In this character I find no appreciable difference between birds from Zomba, Lumbo, and north-central Tanganyika Territory.

Loveridge[1] found 2 nests with 2 eggs each at Kilosa on 5 February, another nest at the same place, with 2 eggs, on 11 April, and still another with 5 eggs there on 30 May. On 25 March he found 2 more nests in process of construction. At Pugu on 17 June, he wrote as follows— "Casually looking out of the railway carriage window at the telegraph posts . . . I was struck by the number of posts carrying nests (presumably last year's), and from the time I started counting till we reached the station, I counted 47, which did not include the remains of old nests. It interested me, as it showed the adaptability of the species to modern conditions, for they had seized on this site in such numbers that two out of three posts were occupied despite the abundant bush close by . . . "

Schuster[2] found this cordon-bleu breeding in May in Unyamwezi.

### Uraeginthus cyanocephalus (Richmond)

*Uraeginthus cyanocephalus* Richmond, Auk, 1897, p. 157: Useri, near Kilimanjaro.

1 ♂, Dodoma, Tanganyika Territory, 30 November 1921.

The present specimen appears to be the southernmost record for the species, and extends the known range from the Kilimanjaro area south to Dodoma. To the north its range extends to the Northern Guaso Nyiro River, and, if we follow Sclater[3] in considering *mülleri* Zedlitz a synonym of *cyanocephalus*, to southern Somaliland. However, van Someren[4] has found *mülleri* to be recognizably paler than typical *cyanocephalus*.

The present specimen is in good, fresh plumage.

Recently Lynes[5] writes that he found this species nesting on March 26 about 50 miles south of Dodoma—a new southernmost locality.

[1] Proc. Zool. Soc. Lond., 1923, p. 902.
[2] Journ. f. Ornith., 1926, p. 727.
[3] Syst. Avium Aethiop., part ii, 1930, p. 806.
[4] Nov. Zool., **37**, 1932, p. 327.
[5] Journ. f. Orn., **82**, 1934, Sonderheft., p. 128.

### Granatina ianthinogaster ianthinogaster (Reichenow)

*Uraeginthus ianthinogaster* Reichenow, Orn. Centralb., 1879, p. 114: Massa, Tana River.

1 ♂, 1 ♀, Dodoma, Tanganyika Territory, 7 December 1918.

"This species is stated in Dr. van Someren's paper[1] to come from Morogoro also. Possibly because I mailed one to him from Morogoro. This is a mistake as all my specimens came from the Dodoma thorn-bush country quite unlike the country around Morogoro where I have never seen it." (A.L.)

The typical race of the purple grenadier occurs from north-central Tanganyika Territory north in eastern Kenya Colony (west to the Kikuyu plateau) to the Tana River. Other races replace it in Somaliland, Ethiopia, and western Kenya Colony.

The present specimens are in good adult plumage and are among the southernmost examples on record.

Van Someren suggests that the Dodoma birds may be a new race, differing from *ianthinogaster* in having the upper back less rufescent, more grayish, more contrasting with the rufous of the head. The present male bears out all this very nicely, but in view of the variability shown by *roosevelti* (if Sclater is correct in regarding as its synonyms *montana* and *rothschildi*) I hesitate to describe a new form on such meagre material. The Dodoma birds are really somewhat intermediate between *ianthinogaster* and *roosevelti*. Zedlitz[2] also suggests that the birds of central Tanganyika Territory may be a new form.

Schuster[3] found a molting bird at Lukole, in Ugogo, two day's march south of Mpwapwa, on 29 May.

### Hypochera chalybeata amauropteryx Sharpe

*Hypochera amauropteryx* Sharpe, Cat. Bds. Brit. Mus., **13**, 1890, p. 390: Rustenburg.

1 ♀, Morogoro, Tanganyika Territory, 4 October 1917.
1 ♂, Kinyambwa, Dodoma, Tanganyika Territory, 7 April 1922.

"Also Kilosa and Mwanza. A male from the latter locality is somewhat less purplish." (A.L.)

[1] Nov. Zool., **29**, 1922, p. 160.
[2] Journ. f. Ornith., 1916, p. 40.
[3] Journ. f. Ornith., 1926, p. 728.

The Mwanza bird has not been available for study, but it is of interest that it is said to be less purplish, as van Someren[1] records specimens from Kisumu and Kendu Bay as "very dull blue-black, with the crown almost dead black."

Sclater[2] gives the range of this indigo bird as, "the Transvaal and Damaraland, north to the Zambesi Valley and Nyasaland." This is incomplete as it has been recorded from Tanganyika Territory and southern Kenya Colony.

The male is in molt; the female is in fairly fresh plumage.

### Hypochera funerea funerea (Tarragon)

*Fringilla funerea* de Tarragon, Rev. Zool. Paris, 1847, p. 180: Natal.

1 ♂, Uluguru Mountains, Tanganyika Territory, 15 May 1921.

"Also Morogoro, Tindiga, and Kilosa." (A.L.)

The dusky indigo bird reaches its northern limits in northeastern Tanganyika Territory.

The single specimen listed above is in worn plumage and is therefore rather difficult to identify with absolute certainty. It may possibly be an unusual example of *H. ultramarina purpurascens* but I think it is probably *H. f. funerea*. It was marked *funerea* some years ago in Tring.

### Vidua macroura (Pallas)

*Fringilla macroura* Pallas, Adumbrat. in Vroeg's Cat. no. 144, 1764, p. 3: "East Indies;" Angola, ex Edwards and Brisson.

1 adult ♂, 1 adult ♀, 1 immature ♂, Morogoro, Tanganyika Territory, 20 July 1917.

1 adult ♂, 1 adult ♀, Kabale, Ruanda, Uganda, 20 September 1919.

"Also Tumutumu, Dar es Salaam, Uluguru Mountains, Ilonga, Kilosa, Dodoma, Kinyambwa, Chantwara, and Kabare. Very common, particularly near cultivated plots." (A.L.)

The pin-tailed whydah is a common bird throughout the regions covered by this report.

[1] Nov. Zool., **29**, 1922, p. 157.

[2] Syst. Avium Aethiop., part ii, 1931, p. 808.

### Vidua hypocherina Verreaux

*Vidua hypocherina* J. and E. Verreaux, Rev. Mag. Zool., 1856, p. 260, pl. xvi: "West Africa;" probably East Africa.

1 ♂, Kipera, Kilosa, Tanganyika Territory, 18 January 1922.
1 ♂, Mahaka, Dodoma, Tanganyika Territory, 14 March 1922.
"Also Dar es Salaam." (A.L.)

The Kipera bird is in prenuptial molt; the Mahaka specimen is in breeding plumage.

The black pin-tailed whydah is a local and generally uncommon species. It occurs from Dodoma, Kilosa, and Ugogo, north to southern Ethiopia and Somaliland.

### Vidua fischeri (Reichenow)

*Linura fischeri* Reichenow, Orn. Centralb., 1882, p. 91: Usegua.

2 ♂, Dodoma, Tanganyika Territory, 20–24 December 1918.
1 ♂, Samumba, Singida, Tanganyika Territory, 27 February 1922.
"Also Suna." (A.L.)

One of the Dodoma males is in nuptial dress; the other one is in prenuptial molt; the one from Samumba is in off-season plumage.

This whydah occurs locally in the bush and scrub country from central Tanganyika Territory north to south-central Ethiopia and to Somaliland.

Schuster[1] found this bird in many places in Ugogo and Unyamwezi.

### Steganura paradisaea paradisaea (Linnaeus)

*Emberiza paradisaea* Linnaeus, Syst. Nat. 10th ed., 1758, p. 178: Africa; restricted to Angola in 12th ed., 1760, p. 312.

1 adult ♂, 1 immature ♂, Morogoro, Tanganyika Territory, 4–5 June 1917.
"Also Kilosa, Saranda, Mahaka, Kinyambwa." (A.L.)

The adult is in the prenuptial molt; the rectrices are only partly developed.

The paradise whydah occurs throughout the territories under consideration in this report except northwestern Tanganyika Territory and most of (except eastern) Uganda.

Schuster[1] found it in several areas in Tanganyika Territory, but nowhere in great numbers.

[1] Journ. f. Ornith., 1926, p. 728.

## Family FRINGILLIDAE. Sparrows, Finches, etc.

### Serinus mozambicus mozambicus (Müller)

*Fringilla mozambica* P. L. S. Müller, Syst. Nat., Suppl., 1776, p, 163: Mozambique.

1 ♂, 1 unsexed, Morogoro, Tanganyika Territory, 3 September and 9 October 1917.
1 ♂, 1 ♀, Kilosa, Tanganyika Territory, 6 and 13 January 1921.

"Also Mombasa and Lumbo." (A.L.)

In the absence of sufficient typical material of *mozambicus* I accept Sclater's conclusion[1] that *madaraszi* is not a valid form. Van Someren[2] recognizes *madaraszi*, but Gyldenstolpe, Sclater, Mackworth-Praed, and others do not.

The present specimens are not wholly typical of *mozambicus* and suggest an approach towards *barbatus* of Uganda. Another bird from the Sotik area in southwestern Kenya Colony is like the description of *pseudobarbatus* van Someren. It may be that the present specimens are nearer to *pseudobarbatus* than to typical *mozambicus*. The former race is not considered distinct by Sclater, but Granvik[3] recognizes it, and I am inclined to do so also.

The Morogoro male is an immature bird. Both Morogoro specimens (September and October) are in worn plumage; the Kilosa examples (January) are in very fresh feathering.

The yellow-fronted canary is a common, widely distributed bird in Mozambique, Tanganyika Territory, and southeastern Kenya Colony. In southwestern Kenya Colony it is replaced by *pseudobarbatus*, and in Uganda by *barbatus*.

The birds breed more or less throughout the year, but chiefly during the rains.

### Serinus dorsostriatus dorsostriatus (Reichenow)

*Crithagra dorsostriata* Reichenow, Journ. f. Ornith., 1887, p. 72: type in Berlin Museum from Wembere, Tabora district.

1 ♂, Samumba, Singida, Tanganyika Territory, 27 February 1922.
1 ♀, Mbonoa, Itigi, Tanganyika Territory, 29 September 1922.

"Also Dodoma and Kabare, Bukoba." (A.L.)

[1] Syst. Avium Aethiop., part ii, 1930, p. 813.
[2] Nov. Zool., **29**, 1922, p. 172.
[3] Journ. f. Ornith., 1923, Sonderheft, p. 194.

The white-bellied canary occurs in the drier portions of the Unyamyembe and Unyamwezi districts north to the Ikoma area and to southwestern Ugogo. The southern limits of its range are imperfectly known. In the Kilimanjaro region the form *taruensis* replaces it. Farther to the north still other forms, *maculicollis* and *harterti*, occur.

The two specimens here recorded are in somewhat worn plumage.

### Serinus sulphuratus shelleyi Neumann

*Serinus shelleyi* Neumann, Orn. Monatsb., **11**, 1903, p. 184: Kafuro, Bukoba Province, Tanganyika Territory.

1 ♂, Kabale, Ruanda, Uganda, 20 September 1919.
1 ♀, Kome Island, Mwanza, Tanganyika Territory, 24 November 1922.

"Also Bukoba." (A.L.)

Sclater[1] considers *loveridgei* and *frommi* as synonyms of *shelleyi*. Hartert[2] writes that *loveridgei*, " . . . may be a good subspecies, but the differences from *shelleyi* and some southern *flaviventris* require confirmation and have not been stated." I find that *loveridgei* (two topotypes seen) is slightly smaller than *shelleyi*, and so, for the present, recognize it as a distinct form. The difference, however, is small (wings, *shelleyi*—♂ 75.5, ♀ 74.0, *loveridgei* ♂ 71.5, ♀ 71.0 mm.).

The present specimens are slightly abraded.

According to van Someren[3] this canary occurs in the more open parts of small forests, and in the scrub country, even coming into plantations and clearings. Nests have been found in Uganda from April to July and from October to December.

### Serinus sulphuratus loveridgei van Someren

*Serinus* (*flaviventris*?) *loveridgei* van Someren, Bull. Brit. Orn. Club, **41**, 1921, p. 114: Lumbo, Mozambique.

1 ♂, 1 ♀, Lumbo, Mozambique, 10 July 1918.

"Very common in the cultivated plots of the natives." (A.L.)

The reasons for recognizing this form have been dealt with under *S. s. shelleyi*.

The female is darker generally than the male.

[1] Syst. Avium Aethiop., part ii, 1930, p. 816.
[2] Nov. Zool., **34**, 1928, p. 199.
[3] Ibis, 1916, p. 427.

This race seems to be known only from the vicinity of Lumbo as yet. Nyasaland birds are somewhat intermediate between *loveridgei* and *shelleyi*, but nearer the latter.

### Serinus sulphuratus sharpii Neumann

*Serinus sharpii* Neumann, Journ. f. Ornith., 1900, p. 287: Marangu, Kilimanjaro.

1 ♂, 1 ♀, Nairobi, Kenya Colony, 29 September 1920.

This is the race of the brimstone canary that inhabits the higher areas of Kenya Colony from the Kilimanjaro area in northeastern Tanganyika Territory west to Kisumu on the Kenya-Uganda border. It is larger than the Ugandan-Tanganyikan form *shelleyi*. The wing lengths of the present specimens are 84 mm., in the male, and 80 mm., in the female.

The present examples are somewhat abraded.

The breeding season is during the rainy periods.

### Serinus donaldsoni buchanani Harterti

*Serinus buchanani* Hartert, Bull. Brit. Orn. Club, **39**, 1919, p. 50: Maktau, near Voi, Kenya Colony.

1 ♀, Dodoma, Tanganyika Territory, 1 December 1921.

The grosbeak canary is apparently not a very common bird anywhere in its range, which extends from Dodoma and Ugogo north to the Ukamba and Teita districts of Kenya Colony. In southern and western (Ethiopian) Somaliland it is replaced by typical *donaldsoni*, which has distinct yellow superciliary stripes, and a much smaller bill and shorter wings. Van Someren[1] has recently recorded typical *donaldsoni* from as far south as Marsabit and Archer's Post, in Kenya Colony.

The present specimen is rather small, having a wing length of only 81 mm., as against 83 mm., given by Hartert[2] for a female from Maktau (spelled Maktan in Hartert's paper). It is in very worn plumage.

A nest with three eggs was collected at Maktau on September 26 by Buchanan.

[1] Journ. E. Afr. and Uganda Nat. Hist. Soc., 1930, p. 60.

[2] Bull. Brit. Orn. Cl., **39**, 1919, p. 51.

### Poliospiza atrogularis reichenowi (Salvadori)

*Serinus reichenowi* Salvadori, Ann. Mus. Civ. Genova, **26**, 1888, p. 272: Cialalaka, Shoa.

1 ♂, 1 ♀, Dar es Salaam, Tanganyika Territory, 4 January 1919. "Also Ngong." (A.L.)

These two specimens differ from a series of *reichenowi* from Ethiopia and Kenya Colony in being paler, more grayish, on the crown, less streaked on the breast, and in having the light frontal and superciliary stripes very poorly defined. It may be that they represent an undescribed race, intermediate between *hilgerti* and *reichenowi*, but in the absence of any material of the former I cannot decide. They are small like *hilgerti* (wing 61 in the ♀, 63 mm., in the ♂), but are brownish, not grayish, on the back.

This species was not known from coastal Tanganyika Territory before.

### Poliospiza striolata striolata (Rüppell)

*Pyrrhula striolata* Rüppell, N. Wirbelth., Vög., 1840, p. 99, pl. xxxvii, fig. 1: Halai and Simen, Ethiopia.

1 ♂, 1 ♀, Ngong, Kenya Colony, 21 July 1919.

The streaky seed-eater is a common bird in the highlands of Kenya Colony and ranges south to Kilimanjaro and the Usambara range in Tanganyika Territory.

The male specimen is very much abraded; the female is much less worn and has the yellowish greenish edges still present on the remiges and rectrices.

### Poliospiza burtoni gurneti Gyldenstolpe

*Poliospiza burtoni gurneti* Gyldenstolpe, Ark. Zool., **19** A, no. 1, 1926, p. 18: Mt. Elgon.

2 ♀, Chantwara, Bukoba, Tanganyika Territory, 15 January 1923.

These two specimens are intermediate between *gurneti* and *tanganjicae* and are about as close to one as the other. While it seems to me better to call them *gurneti* another person might consider them as *tanganjicae* with equal justification. At all events, the locality record is of interest in that the grosbeak seed-eater is primarily a bird of the

highlands, rarely coming down to less than 5,000 feet. Bukoba is about 3,700 feet above the sea.

One of the specimens is in fairly fresh plumage; the other is much abraded.

### Poliospiza burtoni albifrons (Sharpe)

*Crithagra albifrons* Sharpe, Ibis, 1891, p. 118: Kikuyu.

1 ♂, Ngong Forest, Kenya Colony, 19 July 1919.
1 ♀, Nairobi district, Kenya Colony, 28 August 1920.

The Kenya grosbeak seed-eater occurs in the higher areas of Central Kenya Colony from the Kikuyu district to Mt. Kenya and Mt. Uraguess. On Mt. Kilimanjaro it is replaced by *kilimensis*, and on Mt. Elgon and the highlands west of the Rift Valley by *gurneti*. These two forms have no white on the forehead.

The female is in fairly fresh plumage; the male is much abraded.

### Linurgus kilimensis kilimensis (Reichenow and Neumann)

*Hyphantospiza kilimensis* Reichenow and Neumann, Orn. Monatsb., **3**, 1895, p. 74: Kilimanjaro.

1 ♂, Bagilo, Uluguru Mountains, Tanganyika Territory, 24 July 1922.

"Another male of this rare species was obtained at the same place on 20 June 1922." (A.L.)

The present specimen is in fresh plumage and matches the picture given by Neumann.[1] Bagilo is the southernmost locality from which this bird is now known, the previous southernmost record being two young birds collected by Rochl in the western part of the Usambara Mountains, reported by Grote.[2] Farther south, in the Poroto Mountains and Mt. Rungwe, a paler-bellied race, *rungwensis* Bangs and Loveridge, replaces it.

### Spinus citrinelloides frontalis Reichenow

*Spinus citrinelloides frontalis* Reichenow, Vog. Afr., **3**, 1904, p. 275: type in Berlin Museum from Lake Kivu.

1 ♂, Ndeza, Ankole, Uganda, 8 September 1919.

[1] Journ. f. Ornith., 1900, pl. ii, fig. 3.
[2] Journ. f. Ornith., 1921, p. 130.

The single specimen of the Uganda citril collected is an adult male in fairly fresh plumage.

According to van Someren[1] this seed-eater is not very common in Uganda, but breeds there during May and June. Gyldenstolpe[2] records but a single specimen in his collection from the eastern Belgian Congo and never saw the species himself.

### Spinus citrinelloides hypostictus Reichenow

*Spinus citrinelloides hypostictus* Reichenow, Vög. Afr., vol. **3**, 1904, p. 275: type in Berlin Museum from Moshi, near Kilimanjaro.

2 ♂, 1 ♀, Uluguru Mountains, Tanganyika Territory, 15–30 May 1921.

The Kilimanjaro citril occurs from Mt. Kilimanjaro south in the highlands to the Nyasaland plateau. It differs from the other races of the species in that the lores and cheeks of the adult male are grayish and not black.

Roehl obtained a good series of these birds in the Usambara range[3] but I am not aware of previous records from the Uluguru Mountains.

The present specimens are in fresh plumage.

### Emberiza cabanisi orientalis (Shelley)

*Fringillaria orientalis* Shelley, Proc. Zool. Soc. Lond., 1882, p. 308: Mamboia, Ugogo, Tanganyika Territory.

1 ♂, 1 ♀, Uluguru Mountains, Tanganyika Territory, 7 May 1920.

"Also Bungu." (A.L.)

This fine bunting occurs from the north-central parts of Tanganyika Territory south to Mozambique, Nyasaland, and Mashonaland, and southwest to the southeastern Belgian Congo and Northern Rhodesia. It seems to reach its northern limit in the Usambara Mountains.

In Nyasaland its breeding season is mostly in November and December, according to Belcher.[4]

[1] Ibis, 1916, p. 430.
[2] Kungl. Sv. Vet. Akad. Handlngr., 1924, p. 67.
[3] Reported on by Grote, Journ. f. Ornith., 1921, p. 130.
[4] Birds of Nyasaland, 1930. p. 344,

### Emberiza flaviventris flaviventris Stephens

*Emberiza flaviventris* Stephens, Gen. Zool., **9**, pt. 2, 1815, p. 374: Cape of Good Hope.

1 adult ♂, Nairobi district, Kenya Colony, 28 September 1920.
1 adult ♂, Kilosa, Tanganyika Territory, 24 December 1920.
1 immature ♂, Bagilo, Uluguru Mountains, Tanganyika Territory, 8 May 1922.

"Also Morogoro, Dodoma, Mahaka, and Ndeza." (A.L.)

The golden-breasted bunting is a common bird throughout the regions covered by the present collection.

The male from Kilosa, 24 December, was a mated bird with a nest and three eggs, which were also collected. The September Nairobi bird is in fresh plumage; the immature May specimen is badly worn.

### Fringillaria tahapisi tahapisi (Smith)

*Emberiza tahapisi* A. Smith, Rep Exp. Expl. Cent. Afr., 1836, p. 48: sources of the Vaal River, that is, s. e.. Transvaal.

1 ♂, 1 ♀, Dodoma, Tanganyika Territory, 5 December 1921.

"Also Ikikuyu, Mwanza, and Chantwara." (A.L.)

The cinnamon-breasted rock-bunting is widely distributed throughout the areas covered by the present collection, but is nowhere very abundant. It lives in rather arid rocky places and in dry scrub regions. Schuster[1] found it fairly numerous in the Uluguru Mountains.

Both specimens are somewhat abraded.

[1] Journ. f. Ornith., 1926, p. 729.

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# CRITICAL NOTES ON NEW NEOTROPICAL BIRDS

BY LUDLOW GRISCOM AND JAMES C. GREENWAY, JR.

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CAMBRIDGE, MASS., U. S. A.
PRINTED FOR THE MUSEUM
MAY, 1937

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## AT HARVARD COLLEGE

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## No. 2.—*Critical Notes on New Neotropical Birds*

By Ludlow Griscom and James C. Greenway, Jr.

The following notes and descriptions of new subspecies of South American birds are the product of the study of a large collection from lower Amazonia made by A. M. Olalla in 1932 and 1933. As might be expected, many of the novelties do not come from the lower Amazon, but from so many diverse parts of South America and even Panama, that they are best published in advance of our final report.

Particular mention should be made of our obligations to the director of the Carnegie Museum at Pittsburgh and to Mr. W. E. Clyde Todd, the Curator of Birds, for the opportunity of studying the great collections in that institution, and for permission to include in this paper and our final report all information obtained in any way supplementary to the knowledge already available about the ornithology of the Lower Amazon. Such generosity and co-operation is most unusual. This accounts for the frequent citation of material in the Carnegie Museum in the following pages. Two solid weeks were spent in Pittsburgh examining the Klages collections. By agreement with the authorities, we describe such new forms as are represented by specimens in both institutions. Mr. Todd will shortly publish another describing the new forms which are represented solely in the Carnegie Museum.

It might be worth while to put on record here a brief summary of the collections available in Pittsburgh from this general area. From our area in Lower Amazonia, we examined 7,379 specimens; from the Rio Purus and both banks of the Rio Solimoes there are an additional nine thousand specimens. Of almost equal importance in this connection is the collection from French Guiana. We do not recall a single case of a bird for which "Cayenne" is the type locality, which is not represented by adequate to very fine series of perfect skins. The total number of specimens is 7,321, but this includes a large collection from Rocana, Para, just over the Brazil border, a few miles south of Pied Saut, in a region which drains north into the middle reaches of the Oyapock River.

### Crypturellus soui decolor subsp. nov.

*Type.* No. 173,021, Mus. Comp. Zoöl.; ♂ ad.; Pinhy, right bank of Rio Tapajoz, Para, Brazil; June 15, 1933; coll. A. M. Olalla.

*Characters.* Differing strikingly from typical *soui* of Cayenne in

that both sexes are duller colored, less tawny above; females paler and more ochraceous, less tawny below; males less different than females, but greyer and browner, less buffy and ochraceous.

*Material examined. soui:* French Guiana, 1 ♂ 3 ♀ in the Carnegie Museum; *decolor*, the type; also Benevides, 1 ♂; Santarem, 3 ♂ 1 ♀; Rio Tapajoz, Villa Braga and Miriti tuba, 2 ♀ (all in Carnegie Museum).

*Remarks.* This little Tinamou of Central and northern South America is extremely variable and numerous races are now recognized from those parts of its range from which adequate series exist. In fact typical *soui* is possibly the only subspecies as yet inadequately represented. Hellmayr has shown (Novit. Zool., 1906, p. 385) that birds from Para are separable from British Guiana specimens, but the lack of a Cayenne series made it impossible for him to say which of these two forms was typical *soui*.

From Hellmayr's extended comments (Novit. Zool., 1910) it is apparent that birds from the left bank of the Rio Madeira are very different from the subspecies here proposed. They are exceedingly close to *soui*, apparently differing only in the color of the upper tail coverts, though they have since been described as *hoffmansi* Chubb, based on one specimen.

## Notes on Micrastur mirandollei Schl.

A female from the Rio Acara, Para, Brazil, fully adult, and 1 ♀, Villa Braga, Rio Tapajoz (Carnegie Mus.) agree perfectly with the detailed description of the Surinam type, a fine adult from Cayenne (Carnegie Mus.), and with the description and plate in the Biologia Centrali-Americana of a Guiana bird. Two adults from eastern Panama differ notably in having much narrower and paler tail bands and in having the white underparts washed with richer buff. Judging by an immature bird and an intermediate specimen also from eastern Panama, the differences described above have nothing to do with immaturity, and we name the Panama bird:

### Micrastur mirandollei extimus subsp. nov.

*Type.* Museum of Comparative Zoölogy, No. 155,116; ♀ ad.; Permé, Caribbean coast of extreme eastern Panama; April 16, 1929; coll. H. Wedel.

PSOPHIA VIRIDIS INTERJECTA subsp. nov.

*Type.* No. 173,207, Mus. Comp. Zoöl.; ♂ ad.; Cametá, left bank of Rio Tocantins, Para, Brazil, Dec. 20, 1932; A. M. Olalla.

*Characters.* Combining the characters of *obscura* Pelzeln of Pará and typical *viridis;* resembling *obscura* in having purplish reflections on the foreneck, and extensive blue apical spots to the wing-coverts; upper mantle darker, more blackish brown, than in *obscura,* passing rapidly to a brighter, lighter brown on lower back; elongated scapulars very different from *obscura,* much paler and more olive green, less brown; *dextralis* Conover has lead-colored reflections on the foreneck; almost obsolete golden-green apical spots on the wing-coverts; the elongated scapulars are darker and browner, with dusky vermiculations. It follows, therefore, that the scapulars of *interjecta* are intermediate between *dextralis* and *viridis,* while geographically it is intermediate between *dextralis* and *obscura.*

Our single specimen is sufficiently distinct from 2 ♂ 3 ♀ topotypes (Tauary, Rio Tapajoz) of *dextralis* Conover to be worthy of description. Compare in this connection the excellent comments of Conover (Proc. Biol. Soc. Wash., **47**, 1934, pp. 119–120). The Trumpeters are now well known to have their ranges restricted to the areas between the larger rivers.

LEPTOTILA RUFAXILLA HYPOCHROOS subsp. nov.

*Type.* No. 143,253, Mus. Comp. Zool.; ♂ ad.; Paramaribo, Surinam; July 26, 1914; coll. T. E. Penard.

*Characters.* Closest to typical *rufaxilla* (Richard and Bernard) of Cayenne south to the lower Amazon, but strikingly darker and more richly colored above; occiput and hind neck violet purple, less greyish blue; back, rump and tail more vinaceous, less olive brown; whole of the wing except the primaries strongly vinaceous or coppery brown rather than olive brown. Underparts do not show any trenchant color differences.

*Material examined.* Typical *rufaxilla:* Cayenne, large series in the Carnegie Museum; Brazil, Obidos, 2 ♀; Santarem, 1 ?, 1 ♂ (Carnegie Mus.); Rio Tapajoz, various localities, east bank, 4 ♂ 3 ♀, also 2 ♂ 2 ♀ (Carnegie Mus.). *hypochroos:* Surinam, Paramaribo, 14 specimens.

*Remarks.* One of the surprises of our study of the Carnegie Museum collections was the discovery that in a number of cases British or Dutch Guiana specimens do not represent birds the type locality of

which is Cayenne, as has usually been assumed in the past. It is particularly apt to be true, of course, in variable species, like the ground dove here considered. Both Hellmayr and Chapman have commented upon the relative paleness of Brazilian birds as compared with others from British Guiana. Chapman's comments in addition would lead to the inference that his British Guiana series approaches the local form here proposed (cf. Bull. Amer. Mus. Nat. Hist., **34**, 1915, pp. 367-370), but his series consisted in part of 5 specimens of *hypochroos* loaned him by the M.C.Z. The race *hellmayri* Chapman of Trinidad and the north coast of Venezuela is very much paler and more olive brown and much paler below than either *rufaxilla* or *hypochroos*.

### Notes on Amazona amazonica (Linnaeus)

There is an astonishing amount of individual variation in this Parrot in the amount of blue and yellow on the head and the shade of the blue; the wing speculum may be yellow and orange to uniform scarlet, and occupies the outer webs of 3–5 secondaries. We find, however, that four males from Surinam are immediately separable from four Brazilian birds in being radically smaller with slenderer bills. We are aware that Hellmayr (1910, p. 406) changed the type locality to "les pays des Amazones" (ex Brisson), so that the northern form is named:

### Amazona amazonica micra subsp. nov.

*Type.* No. 143,325, Mus. Comp. Zoöl.; ♂ ad.; Surinam, Pomonakreck; Jan. 18, 1913; coll. Penard.

*Characters.* Resembling typical *amazonica* of Brazil (as designated by Hellmayr), but smaller, with a slenderer bill.

2 ♂ *amazonica* — wing 211–218; greatest width of lower mandible 23–23.3

4 ♂ *micra* — wing 183–200; greatest width of lower mandible 18.8–21.3

### Graydidasculus brachyurus insulsus subsp. nov.

12 ♂, 7 ♀, Rio Tapajoz, Santarem.
2 ♂, 6 ♀, 1? north bank of Amazon near Obidos
4 ♂, 2 ♀, south bank, Rio Amazonas, Lago Grande

*Type.* No. 173,516 Mus. Comp. Zoölogy; ♂ ad.; south bank, Rio Amazonas, Lago Grande; Sept. 9, 1932; coll. Olalla.

*Characters.* Resembling typical *brachyurus* (Temm. and Kuhl) of the far Upper Amazon ("Cayana" in error; we designate Apayacu, upper Amazon, east Ecuador), but very much smaller and with, however, a proportionately larger and heavier bill.

*Remarks.* It is certainly surprising that this Parrot should have been overlooked in lower Amazonia and that it is a well marked dwarf form.

| Measurements | Wing | Tail |
|---|---|---|
| 6 ♂ *insulsus* | 139–145 | 48–53 |
| 3 ♂ *brachyurus* | 150–159 | 56.5–63.5 |

### Tyto alba hellmayri subsp. nov.

*Type.* No. 143,296, Mus. Comp. Zoöl.; ♀ ad.; Paramaribo, Surinam; Jan. 30, 1913; coll. Penard.

*Characters.* Similar to *Tyto alba tuidara* (J. E. Gray) of Chile (but perhaps Brazil) in coloration, but considerably larger; wing of type 335 mm.

Hellmayr (1907, p. 29) recorded *Strix flammea* subsp. from Santarem with the following comment. "A very large fine specimen. . . . Very likely it represents an undescribed subspecies." Material before us measures as follows as regards wing length.

| | | | | |
|---|---|---|---|---|
| Chile | 2 ♂ | 253–290 | 3 ♀ | 271–293 |
| Southern Brazil | 2 ♂ | 292–310 | 3 ♀ | 270–315 |
| Santarem | 1 ♂ | 315 | 1 ♀ | 327 |
| Surinam | 1 ♂ | 315 | 2 ♀ | 320–335 |

The new race ranges from the Guianas to the Amazon Valley. *T. a. perlata* Lichtenstein (Brazil; we suggest southern Brazil) is based on *tuidara* Marcgrave and is consequently a synonym of *tuidara* (J. E. Gray). The equally large *stictica* Madarasz of the north coast of Venezuela is a much browner bird above.

### Notes on Nyctiphrynus ocellatus (Tschudi)

One of the rarest of New World whippoorwills, chiefly known from a small series from upper Amazonia. The genus is known in Central America from a single specimen from eastern Nicaragua, described as a distinct species, *lautus* Miller and Griscom, but in reality only a representative form. That this disposition of the case is the proper one is shown by the very distinct race in southeastern Brazil described below:

### Nyctiphrynus ocellatus brunnescens subsp. nov.

*Type.* No. 169,363 Mus. Comp. Zoöl.; ♂ ad ; Fazenda Santa Maria, Rio Gongogy, Bahia, southeast Brazil; April 12, 1932; coll. Garbe.

*Characters.* Resembling typical *ocellatus*, but very much browner and duskier throughout, only a faint rufescent tinge on chest and scapulars.

It will now be seen that there is a gradual change of intergrading characters from north to south, typical *ocellatus* being the intermediate bird. Hellmayr (1910, p. 380) has already commented on the browner coloration of a Bahia bird as compared with a specimen from the Rio Madeira.

1. *lautus* Miller and Griscom. General coloration rich tawny to rufous chestnut. 1 ♂, the type, from eastern Nicaragua, wing 116, tail 103.

2. *ocellatus* (Tschudi). General coloration bright rufous brown. Four specimens, Amazonian Brazil and East Ecuador, ♂, wing 128–129.5, tail 128; ♀, wing 120–121, tail 115–119.

3. *brunnescens* nobis. General coloration light chocolate brown. 1 ♂, wing 130, tail 125.

Due to the marked difference in size between the sexes, any size differences indicated should be confirmed by additional material.

### Notes on Nyctipolus nigrescens (Cabanis)

Birds from the south side of the Amazon average very slightly larger than Guiana specimens, as the following wing measurements show.

| | | |
|---|---|---|
| Lower Amazon | 4 ♂ | 142–150 |
| Guiana | 3 ♂ | 139–140 |
| Lower Amazon | 1 ♀ | 144 |
| Guiana | 3 ♀ | 139–146 |

These differences are insufficient for formal description. *N. maculosus* Todd (Proc. Biol. Soc. Wash., 1920, p. 76) the type of which we have examined, cannot possibly be a distinct species. It is not quite fully adult, and the greater degree of the white spotting on the primaries and rectrices is exactly the same character that distinguishes *N. whitelyi* (Salvin) from *nigrescens*, except that the white on the rectrices is terminal as in *nigrescens*, not subterminal as in *whitelyi*. In other words *maculosus* Todd is a single individual which varies

towards *whitelyi*. A Cayenne trade-skin before us approaches *maculosus* in having a narrow whitish tip to the outermost rectrix. There are really three subspecies as follows:

1. typical *nigrescens* (Cabanis). Male: white spot on primaries 2, 3, 4; white tip on both webs of rectrices 2 and 3, rarely with an oblong tip of white on inner web of outermost (a *maculosus* character). Female: primaries black; no white tips to rectrices.

2. *whitelyi* (Salvin). Male: white spot on primaries 1, 2, 3, 4; white on rectrices 2 and 3 subterminal, on inner web only (a *maculosus* character). Female: fulvous bar replaces white spot on first primary.

3. *duidae subsp. nov. Type*: No. 147,396, Mus. Comp. Zoöl.; ♂ ad.; Valle de los Monos, alt. 725 m., Mt. Duida, Venezuela; Nov. 9, 1928; coll. Olalla.

Much smaller white spots on primaries 3 and 4 only; white tips to rectrices half the extent of *nigrescens*; much silvery grey freckling on scapulars and secondaries. Female: darker below, with smaller spots on the chest.

In this species the amount of grey on the pileum, the presence or absence of a superciliary stripe and the relative distinctness of the barring of the abdomen are age characters. All have been claimed as specific.

## Notes on Caprimulgus rufus (Boddaert)

The receipt of two males from northeastern Brazil (Rio Tapajoz, Tauary and Pinhy), which presumably represent true *rufus*, enables us for the first time to give some notes on the variations of this little known bird. It proves necessary to revise radically the diagnoses of the two currently recognized races. Neither Bangs nor Ridgway ever saw true *rufus*. Ridgway's description of *rufus* is based on very different birds from Venezuela, Colombia and Panama, and his diagnosis of *otiosus* Bangs from St. Lucia is valid for this same material, but requires revision when compared with true *rufus*. We recognize the following races.

1. typical *rufus* Boddaert. Guianas and northeastern Brazil. A large bird, wing of 3 ♂ 165–174, 1 ♀ 184. General coloration darker and more rufescent; spotting on the inner webs of primaries relatively slight; barring on under tail coverts relatively heavy. A Bahia specimen in the American Museum also belongs here.

2. *rufus rutilus* Burmeister. As large as typical *rufus*, wing 181–185 mm.; general coloration similar to *rufus*, but separable at a glance

by the paler, less rufescent plumage; the pectoral collar almost pure white in part; spotting on primaries more extensive; under tailcoverts sometimes nearly immaculate; 1 ♂ 1 ♀ ad.; from Tucuman, Argentina April 9, 1916 and Nov. 14, 1918.

3. *rufus otiosus* Bangs. Island of St. Lucia, Lesser Antilles. Perhaps very slightly larger than typical *rufus*; general coloration much less rufescent, particularly on lower underparts; spotting on primaries and undertailcoverts as in *rufus*. It follows, therefore, that this race is far less distinct from typical *rufus* than previously supposed. 4 ♂ 2 ♀ examined, the males distinctly larger than the two males of *rufus*, the females about the same size as *rufus*, 188–189 mm.

4. *rufus minimus* subsp. nov. *Type.* No. 114,053, Mus. Comp. Zoöl.; ♀ ad.; Panama City, Panama, May 6, 1904; coll. W. W. Brown.

*Characters.* Much less rufescent than *rufus* in general coloration, and smaller, wing of 3 ♀ 169–174 mm.; chin and throat in adult more tawny, consequently paler than in *rufus*, the pectoral collar also tawnier and darker, consequently less contrasted with the throat. Two males and four females, Panama, Colombia and Venezuela (San Julian and Merida). Venezuela birds may prove separable from Panama birds.

*Remarks.* As perhaps can be inferred from the diagnosis above, some of the racial characters alleged by Ridgway to distinguish *otiosus* from *rufus* are matters of maturity. The two females from Colombia and Venezuela are immature birds. In these the abdomen is lighter and more buffy, thickly barred with blackish. The under tailcoverts are less barred than in adults, and there is far more spotting on the inner webs of the primaries. These last two points are consequently not racial characters. It was these two birds that Bangs and Ridgway both took to represent typical *rufus*.

Nomenclatural points are somewhat confused. *Antrostomus rutilus* Burmeister ("Brazil"; we designate southeastern Brazil) was apparently proposed without knowledge of the prior *rufus*. Pelzeln at one time maintained that *rufus* should be replaced by *rutilus* on the ground that the wretched plate in the "Tables Planches Enluminées" was not really identifiable. This point was accepted by Sclater (P.Z.S., 1866, p. 586), who quotes Pelzeln in litt. and who suggested that *rufus* be called *rutilus*, and who described *ornatus* from Rio de Janeiro. This was based on a misconception of tail characters, and is a pure synonym of *rutilus* Burmeister. Pelzeln apparently changed his mind two years later in Ornith. Bras., p. 13. Here appears *Antrostomus*

*cortapau* ex Natterer ms. The type locality would be the first locality mentioned, Engenho do Capitao Gama, which is fifteen leagues from the city of Matto Grosso. (*cf.* Itinerary, p. X). An important footnote states that two specimens from Bahia and the type of *cortapau* differ from a Pará specimen in being *yellower* in general coloration. This seems to us to apply clearly to the pale extreme as represented by the Tucuman specimens cited above, and suggests a southern pale subspecies from most of southern Brazil southward. We feel it is much safer to call this bird *rutilus* Burmeister rather than describe the Argentine bird as new, until evidence to the contrary appears. Bahia birds may prove to be variable intermediates, as the only one seen by us is clearly inseparable from the Rio Tapajoz birds.

### Hydropsalis climacocerca canescens subsp. nov.

*Type.* No. 173,621, Mus. Comp. Zool.; ♂ adult; Lago Grande south bank of the Amazon, west of Rio Tapajoz, Para, Brazil, Sept. 11, 1932; coll. A.M. Olalla.

*Characters.* Resembling typical *climacocerca* of far upper Amazonia, but the adult male notably paler and greyer above, less buffy and white below; the spotting on the wings as a rule pure white rather than buffy or even rusty; black streaking on pileum narrower; adult female apparently slightly paler below, but the light bars on all but the outermost rectrices paler and greyer, less buffy and ochraceous.

*Material Examined. climacocerca:* Manacapuru, Rio Solimoes, 3 ♂ 1 ♀ (Carnegie Museum). *canescens:* Santarem, 14 ♂ 5♀ and Rio Tapajoz, 1 ♂ (Carnegie Museum); also Lago Grande 2 ♂ 2 ♀, and Rio Tapajoz, 1 ♂.

*Remarks.* In default of Peruvian topotypes, we assume that the series from the Rio Solimoes represents true *climacocerca.* Even if it should prove not to be so, there can be little doubt that our bird represents a distinct form, as a very different, a remarkable rich and buffy bird occurs on the Rio Purus much nearer our area. On the north bank of the Amazon at Obidos 1 ♂ 4 ♀ in the Carnegie Museum represent another very distinct subspecies which connects *schomburgki* of British Guiana with *climacocerca.* We have here a graphic illustration of perfect modern series proving extensive geographic variation previously unsuspected in a little known bird. Mr. Todd is about to describe the two races mentioned above of which the M.C.Z. possesses no material.

A word about *trifurcata* Tschudi, first proposed in Wiegmann's

Archiv., 1844, as a nomen nudum, but validated by Tschudi in his Fauna Peruana ex Natterer MS. Sclater and Salvin as the first revisers (P.Z.S., 1866, p. 193) restricted this name to the first locality mentioned, viz. Lower Ucayali, Peru, thus making it a straight synonym of *climacocerca*. It consequently makes no difference that Natterer obtained specimens on the Rio Madeira, which might prove to belong to the form here described.

PHAROMACHRUS PAVONINUS VIRIDICEPS subsp. nov.

*Type.* No. 47,852 Mus. Comp. Zoöl.; ♂ ad.; lower Amazon, Brazil; coll. C. M. Calverly.

*Characters.* Resembling typical *pavoninus* Spix of upper Amazonian Brazil and eastern Ecuador, but upper tail coverts not reaching to tip of tail, instead of slightly surpassing the tail, in fully adult males; head green with little or no golden reflexions, instead of golden or bronzy golden in sharp contrast to green back; female darker green and browner below.

*Remarks.* Whether *pavoninus* is specifically distinct from *auriceps* Gould or not is largely a matter of opinion. The two birds differ only in the color of the bill and in size. As regards the latter point, however, *pavoninus* is distinctly smaller than true *auriceps*, 175–185 mm., versus 193–200 mm., but is little if any smaller than *auriceps heliactin* of western Ecuador. Typical *pavoninus* is a little known bird in collections, and definite localities are few. It has never been definitely recorded from Lower Amazonia. We have a ♀ from the Rio Tapajoz, Tauary, and 2 ♂ ad and 2 ♀ from the Thayer Expedition to Brazil in addition to the type. While none of these latter birds have a definite locality, they belong here on the basis of their characters, and Newton Dexter who collected most of the birds, was in Lower Amazonia only.

GALBULA LEUCOGASTER VIRIDISSIMA subsp. nov.

*Type.* No. 173,977, Mus. Comp. Zoöl.; ♂ ad.; Rio Tapajoz, Pinhy; May 8, 1933; Olalla Bros.

*Characters.* Differing from typical *leucogaster* of Surinam in being strikingly greener, less coppery above and on chest, and central tail feathers averaging about 10 mm. longer.

*Remarks.* This southern extreme from the south side of the Amazon River is distinct at a glance. True *leucogaster* has a very extensive range, as we have specimens from Mt. Duida, Venezuela and the Rio Purus in north central Brazil, which are not satisfactorily separable. 5 ♂ 2 ♀ of the new form examined.

Westward a very rapid transition takes place to *chalcothorax* Sclater, currently treated as specifically distinct. This much larger bird with purplish coppery upperparts and chest is represented in the collection by four specimens from the Rio Suno which agree perfectly with the beautiful colored plate of the type in Sclater's Monograph. From the Rio Curary further east in Amazonian Ecuador, however, we have two specimens, which are perfect intermediates between typical *leucogaster* and *chalcothorax*. These birds make it quite impossible to maintain the latter as specifically distinct. We do not believe that the description of a purely intermediate race is warranted, until evidence is available to show that these characters occupy a reasonably extensive range.

343. Ramphastos tucanus oblitus subsp. nov.

*Type.* No. 174,070, Mus. Comp. Zoöl.; ♂ ad.; Rio Tapajoz, Tauary; May 7, 1933; A. M. Olalla.

Santarem (Chapman and Riker, as *R. erythrorhynchus*).

*Characters.* Resembling typical *tucanus* Linnaeus in size, but upper tailcoverts sulphur yellow with darker, more orange tips, or nearly uniform bright orange yellow; strikingly different from typical *tucanus*, which has uniform lemon or gamboge yellow upper tailcoverts; resembling *cuvieri* in having the bill largely blackish, rather than sanguineous red.

*Remarks.* Any proper treatment of one of these Toucans involves a thorough review of the entire group, beset with numerous complexities, both systematic and nomenclatural. Fortunately four great and keen students of neotropical birds have written notable critiques on this situation in recent years, in each case reporting the evidence of new and interesting material examined by them. These are Hellmayr in a series of famous papers on the birds of Amazonian and northeastern Brazil; Hartert in two papers in Novitates Zoologicae for 1902 and 1925; Chapman in his reports on the birds of Colombia and Ecuador; and Zimmer in his report of the birds of the Marshall Field Peruvian Expedition.

Two outstanding facts of great biological interest have emerged as a result of these studies: — (1) Chapman proved that in upper Amazonia two species, which he called *cuvieri* and *culminatus*, occurred together, differing only in size and proportions and exactly alike in coloration. (2) Hellmayr (Novit. Zool., 1905, p. 299) showed that two species occurred together in the Guianas, which differed only in the color of the bill. This point seems to have been overlooked or ignored by all

workers since, whose collections from the Guianas were either inadequate or erroneously determined.

Another factor, which has obscured the issue in the past, is the fading of the color of the bill of the living bird in death, and the proper allowances to be made for this, when there are both specific and subspecific characters in the color of the bill. The outstanding illustration of this is the old key in the Catalogue of Birds, Vol. 19, where there were three "species" as follows:

a. Bill red, etc. ..... *erythrorhynchus* Gmelin
b. Bill black, etc.
    a. Bill with a reddish basal spot ..... *inca* Gould
    b. Bill uniform black. ..... *cuvieri* Wagler

As a matter of fact these three "species" boil down to two subspecies. It is quite *possible* that there may be some average bill color difference in life between *erythrorhynchus* Gmelin (= *monilis* P. L. S. Müller; = *tucanus* Linnaeus) of Guiana and lower Amazonia and *cuvieri* Wagler of upper Amazonia, the bill of the former often being described as "dark sangineous red" and the latter by Hoffmann as "blackish." In dead birds, however, this difference often disappears. Thus a series before us from the Rio Tapajoz all taken the same year (1933) would key down to all three "species," though we are convinced that only one subspecies is involved. All that can be said then of dead birds is that many specimens of *erythrorhynchus* clearly show they must have had red bills, while others appear all blackish; in *cuvieri* all specimens seen and all others recorded would seem to show a blackish bill with at most a reddish basal spot. It was Zimmer, who recently emphasized these bill characters and suggested that *inca* Gould might disappear from nomenclature. We agree heartily.

There is a nomenclatural moral to these points. The identification of old names had better be made with extreme caution by some expert thoroughly familiar with the complexities of the problem. The brief descriptions of these old names were based on earlier plates of the greatest crudity. We should remember that (1) author and artist were entirely unaware of details, which we now know are of specific or racial importance and (2) we do not know whether the artist was making a crude painting of a *living* bird, or whether he was making an equally crude reconstruction of a dead bird.

To continue our systematic summary, we have then the following species and subspecies:

A. *tucanus* Linnaeus. Bill without the concavity on the side of the maxilla below the culmen; of relatively large size.

1. *tucanus tucanus.* Bill dark sanguineous red; upper tail coverts lemon or gamboge yellow; wing of adults, 225–229 mm.; culmen, 142–146 mm. The Guianas and northeastern Brazil. Birds from Pará approach the next in having sulphur to orange upper tail coverts. Birds from the Rio Xingu are still another connecting link (*fide* Zimmer).
2. *tucanus oblitus* Griscom and Greenway. Bill blackish, with at most a reddish basal spot; upper tail coverts rich sulphur or orange yellow to orange; size similar to the last. Amazonian Brazil (right bank of Rio Tapajoz presumably to left bank of Rio Xingu). 4 ♂ 1 ♀ examined.
3. *tucanus cuvieri* Wagler. Similar to the last in bill and color characters, but much larger; wing of ♂ 242–258 mm., bill 190–217 mm. Wagler's type locality was "Brasilia versus flumen Amazonum." Hellmayr, however, compared specimens from the Rio Madeira with Wagler's type and found them identical. We consequently restrict the type locality to Borba, Rio Madeira. Known definitely from western and northern Matto Grosso, the Rio Madeira, the Rio Purus and the Rio Negro to the Rio Tapajoz, west to the eastern base of the Andes, Bolivia to Colombia. Birds from Mt. Duida, Venezuela are intermediate between *cuvieri* and *oblitus.* The bill is as long as the tail or longer. Large series examined.

B. *aurantiirostris* Hartert. Bill without the concavity on the side of the maxilla, just as in *tucanus.* Coloration and size exactly as in typical *tucanus* (including lemon yellow upper tail coverts), but bill fiery or orange red in life instead of dark sanguineous; in death pale yellowish instead of dark reddish or blackish. Known only from Surinam and British Guiana (where much commoner than *tucanus*) and Venezuela.

As shown by Hellmayr (*loc. cit.*) this bird exists side by side with *tucanus* in Surinam, and he suggested that the light billed bird needed a name. Hartert (Novit. Zool., 1925, p. 143) proposed *monilis aurantiirostris* for this bird, overlooking or disbelieving Hellmayr's evidence. The Penard collection from Surinam contains both species from the vicinity of Paramaribo, and there is no difficulty in separating the two birds, including stubby billed juvenals. We have also seen three specimens from British Guiana in the American Museum. That institution has no specimens of true *tucanus* from British Guiana.

We must here say a few words about the nomenclature. We

heartily agree with Peters (Auk, 1930, p. 405) that Linnaeus' description and references for *tucanus* are clearly referable to this species in the "formenkreis" sense. But it is *not* definitely identifiable as either of the two species here defined. We have the right to apply the name, and consequently propose Surinam as a restricted type locality, and restrict the name *tucanus* to the bird with the dark sanguineous red bill. In this way no nomenclatural upsets are made. We might add that *monilis* P. L. S. Müller, *erythrorhynchus* Gmelin and *haematorhynchus* Berlepsch and Hartert are clear synonyms of *tucanus* Linnaeus, and we definitely restrict the first two to the darker billed bird.

C. *culminatus* Gould. Type locality restricted by Hellmayr to Rio Solimoens, Brazil. Bill with a marked concavity on the side of the maxilla below the culmen. Much smaller than *tucanus cuvieri* with the bill shorter than the tail. Upper Amazonia to the eastern base of the Andes, Bolivia to Colombia. Wing of adults, 190–212; bill 111–149.

The only possible subspecies of *culminatus* is the dubious *osculans* Gould, which, however, seems to have no definite range of its own. It would represent this species in the Guianas, however, if the specimens in the British Museum from British Guiana and Oyapock, Cayenne are authentic. In bill structure and color it agrees with *culminatus* in having the maxillary groove and the pale yellow culmen in sharp contrast with the blackish sides.

## Notes on Pteroglossus aracari

As Hellmayr has shown, typical *aracari* ranges from the south bank of the Amazon south to Bahia. We have an adequate series from Bahia and Rio de Janeiro. It is the bird with a paler yellow breast, and the narrow black culminal ridges.

Still further south, we have three specimens of *aracari* from Santa Rita, Minas Geraes (George Sceva), and São Paulo, Fazo Cayoa and Valparaiso. These birds show a remarkable convergence in body color to *castanotis australis* Cassin, but are immediately separable in having the bill characters of *aracari*, and not those of the specifically distinct *castanotis*, which we also have from Valparaiso, São Paulo. In the latter species the bill is a deeper orange, the black culminal ridge is broadly triangular basally, and the upper mandible has an elongated band of black along the cutting edge. The new subspecies of *aracari* is almost identical in coloration with the black-headed variation of *castanotis australis*. It may be known as

### Pteroglossus aracari vergens subsp. nov.

*Type.* No. 156,885, Mus. Comp. Zoöl.; ♂ ad.; Valparaiso, São Paulo; June 30, 1931; coll. by Lima; ex Museu Paulista in exchange.

*Characters.* Differing strikingly from typical *aracari* in having chin and upper throat dark chestnut brown broadly connected with the side of the head and auricular region, which are also dark chestnut brown. In this respect exactly resembling *castanotis australis*, in which the chestnut is, however, a lighter shade. In addition to the totally different bill characters discussed above, differing from *castanotis* in color in having olive green instead of chestnut thighs.

### Selenidera maculirostris hellmayri subsp. nov.

*Type.* No. 174,105, Mus. Comp. Zoöl.; ♂ ad.; Rio Tapajoz, Boim; Jan. 12, 1933; A. M. Olalla.

*Characters.* Resembling *gouldi* (Natterer) of Pará, but in both sexes black blotch at base of upper mandible more restricted; black blotch near tip of lower mandible surviving only as an obscure jagged line.

*Remarks.* Hellmayr (Novit. Zool., 1910, p. 400) called attention to this character in birds from the Rio Madeira, remarking that this difference should be confirmed by additional material. The birds before us do strikingly confirm it, and we take pleasure in naming the new form after Dr. Hellmayr. 3 ♂ 6 ♀ examined.

### Chrysoptilus punctigula pallidior subsp. nov.

*Type.* No. 174,228, Mus. Comp. Zoöl.; ♂ ad.; Rio Amazonas, Lago Grande; September 6, 1932; A. M. Olalla.

*Characters.* Differing from typical *punctigula* of Cayenne and Surinam (series from Cayenne, Surinam and Obidos examined) in being generally paler above and below, upper parts lighter, more golden brownish; light bars of outer tail feathers paler; chest paler in ground color and more orange, less crimson tinged, the belly paler and purer yellow, less greenish yellow; round black spots on chest and breast usually larger, more distinct and more abundant. 1 ♂ 5 ♀ from the type locality; 7 ♂ 7 ♀, Santarem (Carnegie Mus.).

We are not aware of any report of a series of this woodpecker from the Lower Amazon, with the exception of those recorded by Snethlage, who did not have typical *punctigula* for comparison. The characters of this subspecies have nothing to do with *guttatus* (Spix).

CERCHNEIPICUS TINNUNCULUS ANGUSTUS subsp. nov.

*Type.* No. 171,161, Mus. Comp. Zool., ♂ ad.; Caxiricatuba, right bank of Rio Tapajoz, Para, Brazil; August 12, 1932; coll. A.M. Olalla.

*Characters.* Differing from typical *tinnunculus* in the narrow black barring of the upper parts and the rufous and black barring of the whole of the outer tail feathers; differing from *occidentalis* Hargitt of Amazonian Peru (Upper Ucayali) in that the barring on the upper parts is greatly reduced and the individual bars are always much narrower; in extreme specimens the upper half of the back is almost uniform rufous.

*Material examined. occidentalis:* fine series in the Carnegie Museum from the Rio Solimoes; *angustus:* the type, and 3 ♂ 1 ♀ from Santarem in the Carnegie Museum.

NASICA LONGIROSTRIS AUSTRALIS subsp. nov.

*Type.* No. 104,401, Mus. Comp. Zoöl.; ♂ ad.; Santarem, Brazil; Oct. 2, 1882; coll. unknown.

*Characters.* Adults readily distinguishable from true *longirostris* of the north bank of the Amazon by the lighter upper parts, more fox colored, less chestnut brown; belly slightly more fulvous or tawny, less buff; in immature stages, the difference in the underparts is more intensified.

*Remarks.* Immature specimens of *Nasica* are readily recognized by the paler underparts, the presence of faint barring and cross vermiculations on the belly, and by the paler and larger appearing white guttate markings on chest and abdomen, due really to the paler less blackish borders to the spots. Fully adult specimens with no vermiculations on the belly seem scarce, the majority of our series being transitional. When specimens of comparable age are compared the characters given above are readily appreciable. Immature specimens of *australis,* however, do *not* have the ground color of the belly tawnier than in adults of typical *longirostris.*

An adult and an immature from the base of Mt. Duida in Venezuela agree absolutely with the series from near Obidos. An adult and an immature from Puerto Indiana, Amazonian Ecuador are nearer *australis.*

*Dendrocopus longirostris* Vieillot was based on a Levaillant plate from "Brasil." There being two races in Brasil, we designate Boca-do-Igarapé-Piaba, near Obidos, as the restricted type locality of typical *longirostris. Nasica nasalis* Lesson was based on the same Levaillant plate.

### Ancistrops strigilatus cognitus subsp. nov.

*Type.* No. 174,474, Mus. Comp. Zoöl.; ♂ ad.; Tauary, right bank of Rio Tapajoz, Para, Brazil; Oct. 16, 1932; coll. A.M. Olalla.

*Characters.* Differing from typical *strigilatus* of the Rio Solomoes (17 specimens) in being more ochraceous brown and paler above, less greyish olive brown (even in worn specimens); as a result the shaft streaks are much less contrasted. Below much buffier throughout, particularly on the throat, which is less spotted with dusky; the eye stripe is buffy rather than whitish as are the ear coverts.

*Material examined: strigilatus:* Rio Solimoes, 17 specimens (Carnegie Museum); Rio Purus, 21 specimens (Carnegie Museum). *cognitus:* the type and in the Carnegie Museum, Santarem, 1 ♂; Rio Tapajoz, Miriti-tuba, 2 ♂ 1 ♀; Villa Braga 2 ♂ 1 ♀.

*Remarks.* A series from the Rio Purus (21 specimens) resembles true *strigilatus*, but averages minutely greyer and paler above, a difference which we do not consider sufficient for formal description.

### Philydor erythropterus diluvialis subsp. nov.

*Type.* No. 174,480, Mus. Comp. Zoöl.; ♂ ad.; Caxiricatuba, right bank Rio Tapajoz, Para, Brazil; Aug. 9, 1932; A. M. Ollala.

*Characters.* Differing from typical (?) *erythropterus* in being slightly browner, less ashy above, most noticeable on rump and upper tail coverts; below obviously buffier (on chest) and sides, flanks and under tail coverts more brownish, less ashy.

*Material examined.* Typical (?) *erythropterus:* east Ecuador, 2; Rio Solimoes, 4 (Carnegie Mus.); Rio Purus, 10 (Carnegie Mus.). *diluvialis:* the type and 3 ♂, Villa Braga, left bank of Rio Tapajoz (Carnegie Mus.).

*Remarks.* Our series is obviously a different subspecies from a series from further west. There is no knowing, however, whether these birds represent true *erythropterus* (Bogota collections) or still another form.

### Xipholena lamellipennis pallidior subsp. nov.

*Type.* No. 175,166, Mus. Comp. Zoöl.; ♀ ad. breeding; Santarem, Rio Tapajoz; July 15, 1932; A. M. Olalla.

*Characters.* Adult males inseparable, but breeding females compared with breeding females of the typical form (and non-breeding with comparable birds) notably paler below, more cinereous, less sooty on throat and chest, more whitish on belly and abdomen.

We note the following measurements for the wing of males: — Para, 117–122; Rio Tapajoz, 115–117. There are no size differences in the females. A series of 7 ♂ 5 ♀ from Rio Tapajoz, Pinhy, and Santarem.

TODIROSTRUM LATIROSTRE SENECTUM subsp. nov.

*Type.* No. 175,819, Mus. Comp. Zoöl.; ♀ ad.; Boca do Igarape-Piaba, near Obidos, Brazil; March 6, 1933; coll. A. M. Olalla.

*Characters.* Differing from typical *latirostre* (Pelzeln) of Borba, Rio Madeira, southward and westward, in being slightly greyer, less bright green above, wing bars and edgings paler, less rusty buff; below much greyer on throat and chest, less olive and yellow on flanks and belly; differing from *caniceps* Chapman in being browner on the pileum and lacking the extension of the grey of the pileum of this form on to the hindneck and mantle; wing bars buffier, less rusty; whiter, not so grey below.

*Material examined. latirostre:* Matto Grosso, 2 ♂, series of 18 from Rio Purus and Rio Solimoes (Carnegie Mus.); *caniceps:* 1 ♂, Curaray, east Ecuador; *senectum:* 2 ♀, type locality; 5 ♂, Obidos (Carnegie Mus.); 5 ♂, 2 ♀, Santarem (Carnegie Mus.).

*Remarks.* Never previously recorded from the State of Para. We have seen no topotypes from the Rio Madeira, but note that Hellmayr, who has, refers Matto Grosso and Rio Solimoes birds to the nominate form.

MOLOTHRUS BONARIENSIS RIPARIUS subsp. nov.

*Type.* No. 176,543, Mus. Comp. Zoöl.; ♀ ad.; Pinhy, Rio Tapajoz, Brazil; June 11, 1933; coll. A. M. Olalla.

*Material examined.* 13 ♂, 3 ♀, Rio Tapajoz, various localities east bank; 1 ♀, Lago Grande west of Rio Tapajoz. Also 8 ♂, 4 ♀ in Carnegie Museum.

This series makes it quite impossible to follow Friedmann's treatment (Auk, 1927, p. 500) in which he extends the range of typical *bonariensis* northward to the south bank of the Amazon. This disposition of the case is also followed by Hellmayr (Orn. northeastern Brazil, 1929, p. 273), who abandons his attempt to "revive" *M. bonariensis sericeus* (Licht.) on the basis of size differences only. The main difficulty of both these authors seems to have been that they had very few specimens and practically no adult females. It is, of course, the females that show best the subspecific characters. Curiously enough Madame Snethlage did have a series from the

Amazon, which she referred erroneously to "*atronitens* Cabanis," now *minimus* Dalmas. The average wing length she gives for seven males, 107 mm., is just right for our own series, whereas the males of true *minimus* are less than 100 mm. Hellmayr extended the range of *minimus* Dalmas south to the Amazon on the basis of a ♀ collected by Natterer at Cajutuba, just east of Pará, which measured 99 mm. Other females from this region, however, range up to 104 mm., and this wing length for females of 99–104 mm. is again just right for our females from the Tapajoz. This again has nothing to do with the dwarf female of *minimus,* which is less than 90 mm. There are really three very distinct races, and the one from the Amazon is in no sense an intermediate.

1. *bonariensis* (Gmelin). Type locality, Buenos Aires. Wing of male averaging 114.5 mm. Adult females sooty brown, appreciably lighter below than above; very uniform below, chin and throat but little or not at all lighter than chest. Juvenal males not heavily streaked below. North to Ceara, Piauhy and Maranhao. Synonyms are *sericeus* (Lichtenstein), *minor* (Spix), *violaceus* (Wied) and *murinus* Pelzeln.

2. *riparius* Griscom and Greenway. Wing of male averaging 107 mm. Adult female quite different from *bonariensis,* slightly blacker, less brown, above, relatively paler below; also sootier, less brown, below, the chin and throat abruptly paler than chest, more contrasted than any other South American race, east of the Andes. Two immature males are heavily streaked blackish and buffy below, a plumage we cannot match in any other race. Lower Amazon Valley, westward to the Rio Tapajoz and Obidos. Judging by the recorded measurements of adult males, birds from the Rio Madeira and the Rio Purus do not belong here. Adult females should be examined for a final decision as to their status.

3. *minimus* Dalmas. Type locality, Tobago. A dwarf race, wing of adult males under 100 mm. Female, wing under 90 mm.; paler below, a warmer, less sooty brown than *bonariensis,* which is consequently intermediate in general coloration below. This race does not range south to the Amazon valley, but its southern limits remain to be determined.

### Notes on Tangara cayana (Linnæus)

A good series of 11 ♂ 15 ♀, 2 imm. from Santarem, leads to some unexpected discoveries. In the first place this common tanager is practically unknown on the south bank of the Amazon. In the second

place it is almost identical with typical *cayana* of the Guianas, and shows no approach whatever to *huberi* of Marajo Island or *flava* of eastern and southern Brazil. In the third place there would appear to be a most unusual type of *post mortem* color change in this species. At first glance we supposed that our Rio Tapajoz series represented a very distinct subspecies as compared with a good series of *cayana* from Cayenne, British Guiana and eastern Venezuela. The Brazilian males have a brighter blue chin and throat, and this blue is continued downward as a wash over much of the silky, old gold breast and abdomen. In typical *cayana* this blue is duller and more ashy; there is at most a faint grayish wash on the center of the breast, but the underparts have a distinct lavender tone, lacking in our Santarem series. Much to our surprise, however, two old skins from Santarem are quite indistinguishable from the older northern birds and show none of the characteristics of the recent Santarem series. We conclude, therefore, that some *post mortem* change has taken place. There are also color differences in the females and immature. Our recently killed Brazilian birds are brighter colored below, yellower, less buffy and ashy than northern birds, with more of a silky gloss. But by analogy with the adult males we are suspicious that these differences might also be due to *post mortem* change.

There proves to be a surprising amount of size variation in this species, best brought out by the table below of wing measurements.

| | |
|---|---|
| 1 ♂ "Cayenne" | 75 |
| 2 ♂ British Guiana (interior) | 75–78.5 |
| 2 ♂ Surinam (coast near Paramaribo) | 66.5–67 |
| 8 ♂ east Venezuela | 71–76 |
| 9 ♂ Rio Tapajoz, Brazil | 68–72 |

It will thus be seen that Cayenne and British Guiana birds are large, Venezuela birds slightly smaller, Brazilian birds still smaller, and the Surinam bird a dwarf in sharp contrast with the large size of its geographical neighbor. In addition to this the Surinam birds are distinctly darker above, the female darker and more green than more recently collected Venezuelan specimens, eliminating any possibility of a *post mortem* change. On these characters of size and color, therefore, we propose:

TANGARA CAYANA LITTORALIS subsp. nov.

*Type.* No. 145,451, Mus. Comp. Zoöl., ♂ ad.; June 29, 1921; near Paramaribo, Surinam; Penard Coll., and typify true *cayana* (Gmelin) as the larger bird in the interior of French and British Guiana.

We do not favor the description of the Brazilian bird on size characters alone. While it is a geographic extreme, too much of the range of *cayana* is occupied by intermediate specimens, and the examination of larger series from the interior of French and British Guiana might reduce the apparent large size of birds from this area.

### Habia rubica hesterna subsp. nov.

*Type.* No. 176,738, Mus. Comp. Zoöl.; ♂ ad.; Pataua, right bank of the Rio Tapajoz, Para, Brazil; June 26, 1933; coll. A. M. Olalla.

*Characters.* Differing from *peruviana* Taczanowski of far upper Amazonia in averaging slightly paler below, most obvious in the paler grey veiling on the abdomen and the much paler under tail coverts; throat in adult males pinker and less scarlet.

*Material examined. peruviana:* large series (21 specimens) from the Rio Solimoes and Rio Purus; also 5 ♂ Villa Braga, left bank of Rio Tapajoz (all in Carnegie Museum). *hesterna:* Santarem, 6 ♂ ad., 7 ♂ imm., 6 ♀ (Carnegie Museum); Rio Tapajoz, right bank, 1 ♂ 5 ♀.

*Remarks.* The Rio Tapajoz is very definitely the dividing line between the new form and what is presumably true *peruviana.* Hellmayr cannot separate series from the Rio Madeira and westward in Amazonian Brazil from another series from northwestern Peru. The Villa Braga birds agree perfectly with those from the Rio Purus and Solimoes.

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# ANTS MOSTLY FROM THE MOUNTAINS OF CUBA

By William Morton Wheeler

CAMBRIDGE, MASS., U. S. A.
PRINTED FOR THE MUSEUM
May, 1937

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OF THE

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## AT HARVARD COLLEGE

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No. 3. — *Ants Mostly From the Mountains of Cuba*

By William Morton Wheeler

While studying the distribution of the Coleoptera in the mountains of Cuba during the summer of 1936, Dr. P. J. Darlington generously collected for me such Formicidae as he encountered. The highlands to which for the most part he confined his explorations are the Trinidad Range of Santa Clara Province in Central Cuba and the Sierra Maestra, Sierra del Cobre, Gran Piedra Range, Sierra de Purial, north of Imias and the Yunque de Baracoa, in the Province of Santiago de Cuba (Oriente), at the eastern end of the island. The collection is noteworthy, first, for the number of forms (9 species, 8 subspecies, 3 varieties) which he has added to the known Cuban fauna and especially for the fine series of Macromischa, of which he collected, mainly by beating foliage, no less than 13 forms, of which 10 are new to science, and second, for his discovery of a new Cylindromyrmex. This remarkable genus and the subfamily Cerapachyinae to which it belongs were not previously known to have representatives in the Antilles. This is an outstanding achievement, considering the intense interest of collectors in the beautiful ants of the genus Macromischa and the number of species of this genus already described from Cuba. Since the list of the known species in my paper of 1931 is already antiquated, I append a revised list to the present publication. In my former account I raised Mann's subgenera Croesomyrmex and Antillaemyrmex to generic rank, but the recent discovery by Dr. Aguayo of a subspecies of *C. wheeleri* Mann with vestigial epinotal spines, and the discovery by Dr. M. H. Smith of a subspecies of *M. isabellae* Wheeler without epinotal spines, necessitates a return to Mann's original conception. The list of Macromischa *sens. lat.* now comprises 53 species, 12 subspecies and 14 varieties and therefore nearly quadruples the number of forms cited in Emery's "Genera Insectorum" list of 1921. Dr. Darlington's collection emphasizes the very local distribution of these ants in Cuba and suggests that the careful collector, especially in the many unexplored recesses of the mountains of Oriente, may succeed in bringing to light other members of this exquisite genus.

## Subfamily CERAPACHYINAE

Cylindromyrmex (Hypocylindromyrmex) darlingtoni sp. nov.

*Worker.* Length 5.6–6 mm.

Head suboblong, one third longer than broad without the mandibles, as broad in front as behind, with straight, parallel sides and angularly

excised posterior borders. Eyes small, flat, nearly as long as the greatest diameter of the antennal scapes, one third as long as their distance from the posterior corners of the head and situated at its posterior two-fifths. Ocelli minute but distinct. Mandibles large and convex, with evenly rounded external borders, the apical borders broad, with about 10 subequal, low, blunt teeth. Antennal scrobes, clypeus and frontal lobes of the usual conformation. Frontal area distinct, elongate -lanceolate. Antennal scapes less than three times as long as broad; first funicular joint as broad as long, joints 2–7 more than twice as broad, 8th as broad as long, the large terminal joint as long as the 9th and 10th together. Thorax short, somewhat less than twice as long as broad, parallel-sided, semicircularly rounded behind, with rounded humeri and short neck; promesonotal and mesoëpinotal sutures distinct, interrupting the sculpture but not impressed. In profile the thoracic dorsum is nearly flat, the sides of the pronotum marginate, of the meso- and epinotum submarginate, the declivity of the latter abrupt, forming nearly a right angle with the base. Petiole distinctly longer than broad, with a blunt tooth at each of its anterior corners, the node distinctly widened behind and in this region with rounded, convex sides; in profile the anterior surface is flat and perpendicular, the dorsal surface evenly convex. The anteroventral process of the petiole is large, subrectangular in profile, and laterally compressed. Postpetiole about one and two-thirds times as broad as the petiole and a third broader than long. Gaster long but not much broader than the postpetiole. Pygidium truncated posteriorly and beset with numerous spinules. Legs short, the femora and tibiae broad and flattened, the hind tarsi decidedly longer than the hind tibiae, which are furnished with a long and a short pectinated spur.

Shining; mandibles finely striate and coarsely punctate apically, smooth at the base; head including the scrobes, thorax, petiole and postpetiole rather finely striate, the striae occasionally interrupted by sparse, elongate, piligerous punctures; pleurae and first gastric segment more finely striated, but the latter only on the anterior half where it is also coarsely and sparsely punctate. Remaining gastric segments, scapes and legs smooth, with numerous fine, superficial punctures.

Erect hairs yellowish, sparse, delicate, moderately long, of uneven length. The anterior border of the gula bears a conspicuous fringe or tuft of bristles, and there are some long, sparse hairs along the ventral surface of the lateral borders of the mandibles and a few long deflected hairs on the anterior, truncated surface of the clypeus. Pilosity sparse on the legs, most abundant on the tarsi. Gastric segments distinctly pubescent.

Black; tips of scapes, funiculi, legs and pygidium brownish red, femora dark brown, terminal funicular joint and tarsi, except the basitarsi, paler and more yellow.

*Female.* Length 7.5–8 mm.

Closely resembling the worker. The head is not longer in proportion to its width but the eyes are much larger though only feebly convex, as long as their distance from the posterior corners of the head. Ocelli larger than in the worker. Scapes broader, with their anterior border more strongly excised at the base. Thorax long; pronotum, without the neck, subtrapezoidal, nearly twice as broad as long, with straight, submarginate, posteriorly diverging sides. Promesonotal suture semicircular, distinct and impressed. Mesonotum and scutellum small and flat. Gaster longer than in the worker owing to a lengthening of the individual segments. Wings short (5 mm.)

Sculpture very much like that of the worker but the striae on the posterior portions of the mesonotum and scutellum and dorsal portion of the mesopleurae feeble or absent, so that these regions are smoother and more shining. Gaster more densely punctulate than in the worker. Pilosity and color as in that caste. Wings grayish hyaline, veins dark brown, pterostigma black.

Described from four workers and two females taken by Dr. Darlington June 30, 1936, in decayed wood on the Gran Piedra Range, Oriente, at an altitude between 2000 and 3000 ft.

This species is peculiar in the structure of the mandibles in the worker and female, and in the retention of distinct promesonotal and mesoëpinotal sutures by the former.

Dr. A. E. Emerson has sent me from Barro Colorado Island, in the Panama Canal Zone, all three castes and pupae of Santschi's *C. parallelus*, described in 1932 from a single deälated female. The worker has small, flat eyes and belongs, therefore, to my subgenus Hypocylindromyrmex. The wings of the female and male are grayish hyaline, with distinctly infuscated tips. The pupae are naked, that is, not enclosed in cocoons! Santschi believes that my subgenus Metacylindromyrmex may not be valid, because the two pectinate spurs of the hind tibiae, on which it was based, are present also in *striatus* Mayr and *brasiliensis* Emery, which I assigned (1924) to Cylindromyrmex *sens. str.* Examination of a long series of *striatus* sent me by Dr. Wolfgang von Hagen from Ecuador confirms this opinion. Unless, therefore, the workers of *godmani* Forel and *boliviae* Wheeler, known only from female specimens, are found to have some other significant character, the subgenus will have to be synonymized with Cylindromyrmex *sens. str.*

I subjoin a revised dichotomic table for the indentification of the 11 species of Cylindromyrmex now known.

1. Workers . . . . . 2
   Females . . . . . 10
2. Eyes small and flat; at least the first gastric segment more or less striated (Subgen. Hypocylindromyrmex) . . . . . 3
   Eyes large and convex; gastric segments smooth and estriate (Subgen. Cylindromyrmex) . . . . . 7
3. Head nearly twice as long as broad; apical borders of mandibles edentate. Length 8 mm. (Brazil) . . . . . *longiceps* Ern. André
   Head not more than one and one-half times as long as broad; mandibles dentate . . . . . 4
4. Tergite of first gastric segment striated only at the base . . . . . 5
   Tergite of first gastric segment entirely and base of second partially striated . . . . . 6
5. Body brownish red, with gaster and anterior portion of head black; mandibles 6-toothed; eyes very small, with only about 15 facets. Length 4.5 mm. (Brazil) . . . . . *brevitarsus* Santschi
   Body black; mandibles larger and more convex, 10-toothed; eyes larger, with more numerous facets. Length 5.6–6 mm. (Cuba) . . . . . *darlingtoni* sp. nov.
6. Dark brown; scapes twice as long as broad. Length 5.5–6.5 mm. (Venezuela) . . . . . *meinerti* Forel
   Black; scapes three times as long as broad. Length 5.5 mm. (Panama) . . . . . *parallelus* Santschi
7. Striæ and interstriæ of head, thorax and pedicel very coarse and regular . . . . . 8
   Striæ and interstriæ of head, thorax and pedicel finer and less regular. Length 6–7.3 mm. (Brazil) . . . . . *brasiliensis* Emery
8. Legs stout; tibiæ, except at their tips, whitish or pale ivory yellow . . . . . 9
   Legs more slender, entirely black, except the terminal tarsal joints. Length 4.5–6 mm. (Galapagos Islands) . . . . . *williamsi* Wheeler
9. Frontal carinæ not strongly developed; eyes situated at the middle of the sides of the head. Length 6–6.5 mm. (Costa Rica) . . . . . *schmidti* Menozzi
   Frontal carinæ large, prolonged as striæ to the occiput; eyes distinctly behind the median transverse diameter of the head. Length 7 mm. (Peru, Ecuador) . . . . . *striatus* Mayr
10. Postpetiole and gaster smooth and estriate . . . . . 11
    Both petiole and postpetiole entirely striate above . . . . . 12

11. Femora yellow; fore tibiæ more than twice as long as broad; wings brownish. Length 10 mm. (Bolivia)..... *boliviæ* Wheeler
    Femora reddish black; fore tibiæ scarcely twice as long as broad; wings violaceous. Length 12.5 mm. (Panama, Ecuador)..... *godmani* Forel
12. Petiole and postpetiole coarsely and evenly striate; gaster smooth and estriate throughout.....13
    At least the first gastric segment more or less striate.....14
13. Head one and one-half times longer than broad; legs slender and black, except the terminal tarsal joints. Length 7 mm..... *williamsi* Wheeler
    Head shorter; legs relatively stout; tibiæ, except their tips, pale ivory yellow. Length 7 mm..... *striatus* Mayr
14. Gaster with striation only at the base of its first tergite; mandibles 10-toothed. Length 7.5–8 mm..... *darlington* sp. nov.
    Tergite of first gastric segment at least entirely striated.....15
15. Mandibles 7-toothed; tergite of second gastric segment entirely striated, third segment with striæ at the base; wings grayish hyaline, with infuscated tips Length 9 mm.. *parallelus* Santschi.
    Mandibles indistinctly dentate; tergite of second gastric segment with striæ only in the middle; second segment smooth; wings uniformly infuscated. Length 9.5 mm..... *schmidti* Menozzi.

## Subfamily PONERINAE

### Thaumatomyrmex cochlearis Creighton

A single worker of this rare and extraordinary ant recently taken by Dr. Marston Bates and Dr. Graham Fairchild with the Berlese funnel at Limones Saboruco, Soledad. The type specimen in Dr. Creighton's collection is from Mina Carlota, also in Santa Clara Province.

### Euponera (Trachymesopus) succedanea (Roger)

Seven workers from Buenos Aires, Trinidad Mts., 2500–3500 ft., May 9–14, 1936 and the Sierra de Purial, near Imias, July 25, 1936, and a worker and female from the Gran Piedra Range, Oriente, 2000–3000 ft., June 30, 1936.

### Ponera opaciceps Mayr subsp. jamaicensis Aguayo

A single worker from the Sierra del Cobre, Oriente, 3000–3800 ft., July 7, 1936, agreeing closely with Aguayo's type from Jamaica in the

Museum of Comparative Zoology. I have raised this form, described as a variety, to subspecific rank because it differs from *opaciceps* almost sufficiently to be regarded as a distinct species.

Ponera trigona Mayr subsp. opacior Forel

One deälated female from the south side of Pico Turquino, Sierra Maestra, 1500 ft., June 1936.

Leptogenys puncticeps Emery

Twelve workers from Los Llanos, Eastern Oriente, 1000–2000 ft., July 16–20, 1936.

Odontomachus haematoda L. subsp. insularis (Guérin) var. pallens Wheeler

Three workers, two females and two males from Buenos Aires, Trinidad Mts., 2500–3500 ft., May 9–14, 1936.

## Subfamily PSEUDOMYRMINAE

Pseudomyrma pallida F. Smith

A single small worker from the Yunque de Baracoa, Oriente, July 13, 1936.

Pseudomyrma elongata F. Smith subsp. subatra Wheeler and Mann.

A single worker from the coast below Pico Turquino, Sierra Maestra, June 26, 1936, agreeing well with the cotypes from Haiti.

## Subfamily MYRMICINAE

Pheidole punctatissima Mayr subsp. jamaicensis Wheeler var. praetermissa Wheeler

Two soldiers and a worker from Los Llanos, Eastern Oriente, 1000–2000 ft., July 16–20, 1936. Previously known only from Haiti.

Pheidole similigena sp. nov.

*Soldier* Length 2.5–3 mm.

Related to *Ph. floridana* Emery. Head large, subrectangular, without the mandibles distinctly longer than broad and distinctly narrower

in front than behind, with distinct occipital inpression and rather deeply and angularly excised posterior border. Eyes small, at the anterior fifth of the sides, which are rather convex. Clypeus ecarinate, moderately convex posteriorly, its anterior border broadly and very feebly excised in the middle and narrowly sinuate on each side. Mandibles convex but with nearly straight external borders, their apical borders with two large terminal and two small basal teeth. Frontal area distinct, subtriangular, rounded behind; frontal carinae rather strongly diverging posteriorly where they are twice as far apart as each is from the lateral border of the head, as long as the antennal scapes and forming the mesial borders of narrow, shallow, scrobe-like impressions. Antennae slender; scapes curved at the base, reaching only to the middle of the sides of the head; clubs longer than the remainder of the funiculi; joints 2–8 slightly longer than broad. Pronotum half as broad as the head, forming with the mesonotum a convex, hemispherical mass, with rounded humeri and feeble mesonotal torus; epinotum much lower, as broad as long, marginate on each side, rather concave and sloping in the middle; the spines stout, not very acute, suberect, as long as their basal diameter but shorter than their distance apart. Peduncle of petiole rather short, anterior and posterior faces of node concave, its superior border rather thick and blunt, emarginate when seen from behind. Postpetiole more than twice as broad as long and as broad as the petiolar node, its sides produced at the middle as acute angles, which are not conulate as in *floridana*. Gaster broadly elliptical, about as large as the head. Femora only moderately thickened.

Shining, with sparse, piligerous punctures, which are largest on the mandibles and posterior half of the head; somewhat more than the anterior half of the head rugose, the rugae fine, sparse, and diverging on the front, coarser, more reticulate and longitudinal on the cheeks and also coarse but more oblique or concentric around the antennal insertions. Scrobe-like impressions nearly smooth, with only a few short, longitudinal rugules. Remainder of body smooth, except for the small, scattered, piligerous punctures.

Pilosity yellowish, erect or suberect, moderately long and abundant; shorter and more oblique on the legs, scapes, sides and ventral surface of head.

Black or dark brown; cheeks, antennae, clypeus, neck and mandibles, except their apical borders and tips, testaceous; legs, including the coxae, more brownish yellow, middle of femora and tips of antennal scapes brown.

*Worker.* Length 1.4–1.5 mm.

Head subrectangular, broader in front than behind, with feebly convex sides and slightly concave posterior border. Eyes at the anterior third of the sides, shorter than their distance from the anterior corners. Mandibles with multidenticulate apical border and long apical tooth. Clypeus convex behind, with medially straight, transverse anterior border. Frontal area distinct, triangular, not impressed. Antennal scapes extending about twice their greatest diameter beyond the posterior border of the head. Thorax shaped as in the soldier, but the promesonotum is less convex; mesoëpinotal impression deep, base of epinotum slightly convex in profile. Node of petiole narrow, subconical, without emargination. Postpetiole subglobular, as long as broad, with the sides very feebly angulate anteriorly, less than half again as broad as the petiolar node. Legs rather long.

Smooth and shining, with minute, sparse, piligerous punctures, more distinct on the mandibles. Cheeks and front longitudinally rugulose.

Pilosity whitish, like that of the soldier, but sparser, short and bristly on the antennae and legs, long on the dorsal surface of the body.

Black or dark piceous; mandibles, antennae and remainder of legs paler, yellowish brown, except the middle portions of the femora which are dark brown.

Described from three soldiers and four workers from Buenos Aires, Trinidad Mts., 2500–3500 ft., May 9–11, 1936.

Though obviously related to *Ph. floridana*, this ant differs in so many characters that I have not hesitated to describe it as a distinct species. Its status may change when some myrmecologist undertakes a revision, now long overdue, of the large and difficult *flavens* group of Neotropical Pheidoles.

### Spelaeomyrmex urichi Wheeler

A single worker taken at an altitude of 3500 ft. in the Sierra de Purial, north of Imias, in leaf mold.

This minute ant was previously known only from the type specimens collected in nests of the Guacharos (*Steatornis*), in a cave in Trinidad. Very recently Prof. A. S. Pearse has sent me two specimens which he found on bat guano in a cave in Yucatan. Its occurrence in leaf-mold in Cuba is not surprising since other minute cave-insects are known to live occasionally in similar situations, but we should expect it to be more abundant in some of the many bat-infested caves of the island.

Solenopsis geminata (Fabr.)

A few workers of the typical dark form of this common ant from the south side of Pico Turquino, Sierra Maestra, 3000–3500 ft., July 7, 1936.

Monomorium carbonarium (F. Smith) subsp. ebeninum Forel

Single worker and female specimens from Buenos Aires, Trinidad Mts., 2500–3500 ft., May 9–14, 1936.

Crematogaster (Orthocrema) steinheili Forel

A single worker from the coast below Pico Turquino, Sierra Maestra, July 25, 1936.

Crematogaster (Acrocoelia) sanguinea Roger var. atavista Mann.

Two workers from the Sierra de Purial, north of Imias, July 25, 1936.

Crematogaster (Acrocoelia) sanguinea var. torrei Wheeler

Seven workers from the coast below Pico Turquino, Sierra Maestra, July 25, 1936.

Macromischa purpurata Roger

Numerous workers from the following localities: Yunque de Baracoa, 1000–1800 ft., July 13, 1936; Sierra del Cobre, 3000–3800 ft., July 7, 1936 and the Sierra de Purial, near Imias, 3500 ft., July 20, 1936.

Macromischa manni Wheeler var. villarensis Aguayo

Four workers from Buenos Aires, Trinidad Mts., 2500–3500 ft., May 9–14, 1936, agree closely with Aguayo's cotypes in the Museum of Comparative Zoology. Apart from its shape, the petiolar node of this variety is shorter and its anterior surface rises more abruptly from the peduncle than in the typical *manni*.

Macromischa squamifera Roger

Five workers from Buenos Aires, Trinidad Mts., 2500–3000 ft., June 9–14, 1936.

Macromischa scabripes Mann var. brunneipes var. nov.

I have not seen specimens of the typical *scabripes*, described from Saetia, Oriente, but two workers taken by C. T. Ramsden at Guantanamo, in the same province, May 7, 1914, and loaned me by the

Philadelphia Academy of Science agree closely, except in color, with Mann's figure and description. The brownish red head has distinct greenish reflections and the thoracic dorsum is metallic green passing into metallic violet on the pleurae, the epinotal spines are red, the femora, tibiae and tarsi brown instead of black. The pale pilosity seems to be longer and more abundant than in the typical *scabripes*. The rounded transverse rugae of the thorax in the variety here described extend as in the type to the anterior end of the pronotum, that is, to the very base of the neck. The middle and hind basitarsi, which are nearly as long as the tibiae, are distinctly compressed.

### Macromischa darlingtoni sp. nov.

*Worker*. Length 4.3–4.6 mm.

Closely related to *scabripes* Mann but decidedly larger. Head subrectangular, distinctly longer than broad, as broad through the posterior as through the anterior corners, with feebly convex sides and medially placed, convex eyes, the posterior border sinuate. Mandibles convex, with five stout, subequal teeth. Clypeus flattened, its anterior border transverse and broadly sinuate in the middle. Frontal area indistinct. Antennae stout; scapes curved basally, not reaching to the posterior corners of the head; second funicular joint longer than broad, half as long as the first; joints 3–7 slightly broader than long; 8 as long as broad; club well-developed, 3-jointed, the terminal as long as the two preceding joints together. Thorax shaped as in *scabripes*, distinctly flattened above and without promesonotal and mesoëpinotal sutures; epinotal spines closely approximated basally, straight, somewhat stouter but scarcely longer than in *scabripes*. Petiole with similar peduncle, which is as long as the node, but the latter is quite unlike that of *scabripes*, being squamiform, rising perpendicularly in profile or with slightly concave anterior face, with rounded summit and long, convex posterior slope; seen from above it is transverse and subtriangular, fully three times as broad as the pedunele at its narrowest point; from behind higher than broad, subelliptical, its apex slightly narrowed but rounded. Postpetiole campanulate, broader than long. Gaster small, elongate-elliptical, acutely pointed posteriorly; sting very long. Legs long, with strongly incrassated femora and tibiae; middle and hind basitarsi compressed.

Shining; mandibles rugose-punctate; clypeus longitudinally, antennal foveae concentrically rugose; remainder of head with delicate, undulating, interrupted rugules, which on the front gradually diverge posteriorly and tend to fade out on the occiput. Neck transversely

shagreened; pronotum with sparse, irregular, transverse rugules and coarse, scattered punctures; remainder of thoracic dorsum with a series of about 21 coarse, rounded (costate), transverse rugae, like those of *scabripes*, becoming longitudinal on the sides of the meso- and epinotum. Sides of petiolar node with 6–7 similar rugae, its posterior surface very smooth and shining, like the postpetiole and gaster. Posterior border of postpetiole coarsely shagreened, gastric segments with scattered, piligerous punctures. Femora tuberculate, but not as strongly as in *scabripes;* tibiae, basitarsi and antennal scapes finely, longitudinally striate.

Hairs white, erect or suberect, bristly, rather short and uneven, covering the whole body, most abundant on the head and thorax, sparse on the gaster, scarcely shorter on the appendages.

Mandibles, clypeus, frontal carinae and antennal foveae brownish yellow; teeth and basal border of mandibles black; remainder of head red, with vivid purplish and golden reflections; neck reddish yellow; sides and anterior quarter or third of pronotum metallic purple, declivity of epinotum and tips of its spines and metasternal angles yellowish red; remainder of thorax vivid metallic green. Node of petiole, postpetiole and gaster black, the extreme base of the first gastric segment and sting reddish or yellowish; sides of petiolar node metallic green; peduncle of petiole, coxae, trochanters and basal two-thirds or three-fourths of femora orange yellow; antennae and remainder of legs black.

Described from seven specimens taken by Dr. Darlington on the coast below Pico Turquino, Sierra Maestra, June 26, 1936.

This very beautiful species is readily distinguished from *scabripes* by its larger size, more shining head and thorax, much more vivid coloration, the absence of costate rugae on the pronotum, partially orange femora and very different petiolar node.

### Macromischa opalina sp. nov.

*Worker.* Length 2.8 mm.

Very similar to *darlingtoni* but much smaller. Head proportionally longer, slightly broader in front than behind, anteriorly with nearly straight, subparallel sides, straight posterior border and more convex and slightly more anteriorly placed eyes. Clypeus with entire, rounded anterior border. Antennal scapes proportionally shorter, not reaching the posterior corners by a distance equalling the length of the eyes; funicular joints 3–7 also proportionally shorter. Thorax, pedicel, gaster and legs much as in *darlingtoni*, but the petiolar peduncle is

shorter and the node narrower and when seen from behind terminating above in a more distinct point.

Clypeus and head smoother, the latter bearing only feeble traces of longitudinal rugules. Pronotum also smooth, the transverse rugae on the meso- and epinotum anterior to the spines only 16 in number, those on the meso- and metapleurae less coarse, those on the epinotal declivity even finer, those on the sides of the petiolar node less pronounced than in *darlingtoni*.

Pilosity and coloration much as in *darlingtoni*, but the former less abundant on the body. Declivity of epinotum and ventral portions of meso- and metapleurae metallic purple like the pronotum; hind femora brown with black bases and apices; remainder of legs colored as in *darlingtoni*.

A single specimen from the coast below Pico Turquino, Sierra Maestra, June 21, 1936. Perhaps this form should be regarded as an extreme subspecies of *darlingtoni*, but it is so easily recognizable that it seems preferable to give it specific status.

*M. darlingtoni* and *opalina* belong to the group of superb Macromischas comprising *splendens* Wheeler of the Bahamas and the Cuban *scabripes* and *squamifera*. The members of this *splendens* group, as it may be called, agree in having very thick, tuberculate femora and dorsally depressed, transversely rugose or costate thoraces.

### Macromischa platycnemis sp. nov.

*Worker*. Length about 4 mm.

Head subrectangular, without the mandibles only slightly longer than broad, slightly broader behind than in front, with nearly straight sides and posterior border and rounded posterior corners. Mandibles convex, with five large, blunt teeth. Clypeus flattened, with a median carinula, its anterior border emarginate in the middle and sinuate on each side. Eyes convex, at the middle of the sides of the head. Frontal area distinct, impressed. Antennae stout, their scapes reaching nearly to the posterior corners of the head; second funicular joint longer than broad, half as long as the first joint; joints 3–8 broader than long; club well-developed, 3-jointed, its terminal joint as long as the two preceding joints together. Thorax short, about two and one-half times longer than broad; in profile evenly and rather strongly convex dorsally, without promesonotal and mesoëpinotal sutures, the declivity of the epinotum perpendicular, the spines long, closely approximated basally, directed backward, obliquely outward and upward, their tips very slightly upturned. Peduncle of petiole very long and slender,

more than four times as long as the node, when seen from above, slightly enlarged at the middle where the spiracles are situated; in profile with the posterior thinner than the anterior half. Petiolar node squamiform, in profile rising perpendicularly from the peduncle, narrowly rounded at the summit and less abruptly sloping and somewhat convex behind; from behind as high as broad, semicircular above and rather abruptly contracted below at the sides; in dorsal view more then twice as broad as long, three times as broad as the peduncle, broadly convex behind and roundly triangular in front, the sides bluntly marginate. Postpetiole campanulate, distinctly longer than broad, its sides straight and subparallel behind. Gaster small and very slender, nearly three times as long as broad, with very long sting. Femora and tibiae incrassated, but less strongly than in the two preceding species; femora nontuberculate, both the tibiae and basitarsi distinctly compressed.

Mandibles, antennae, head and thorax subopaque; legs and remainder of body shining. Mandibles striate-punctate; clypeus with a few delicate longitudinal rugules, mainly on the sides; head longitudinally rugose, the rugae fine and diverging on the front, coarser and more reticulate on the occiput, sharp and concentric in the antennal foveae. Both the scapes and funiculi of the antennae microscopically reticulate. Thorax coarsely and regularly, longitudinally rugose both dorsally and laterally, the rugae rounded and vermiculate, occasionally anastomosing, irregularly reticulate on the epinotal declivity; neck transversely rugulose. Gaster very smooth, with sparse piligerous punctures; legs superficially and very finely reticulate.

Hairs white, erect or suberect, moderately long, of uneven length, abundant on the head, antennae and legs, sparse on the thorax and abdomen.

Head red, clypeus and mandibles more yellowish, teeth of latter black; antennae brown; neck brownish red; thorax metallic blue-green, epinotal spines reddish brown; peduncle of petiole, tips of coxae, trochanters, extreme bases of femora and sting yellow, remaining parts of legs brown, except the terminal tarsal joints which are paler and more reddish.

Described from a single specimen from the coast below the Pico Turquino, Sierra Maestra, June 26, 1936.

This fine species resembles some of the non-metallic species of the genus, such as *allardycei* Mann and *affinis* Mann in the conformation of the thorax, but differs from all the species of Macromischa sens. str., except *purpurata* Roger, in the great length and tenuity of the petiolar peduncle.

### Macromischa chloana sp. nov.

*Worker.* Length 2.5–3 mm.

Related to *M. bruneri* Mann but clearly distinct. Head shorter, only slightly longer than broad, broader behind than in front, with more convex sides and vertex, medially placed eyes, broadly rounded posterior corners and straight or very feebly sinuate posterior border. Mandibles convex, with five rather small teeth. Clypeus convex, with median carinula, its anterior border projecting and rounded and with feeble but distinct median emargination. Frontal area large, distinct, triangular and impressed. Antennae rather stout; scapes nearly reaching the posterior border of the head; second funicular joint distinctly longer than broad; joints 3–8 slightly broader than long; the 3-jointed club well-developed, its terminal joint decidedly thicker than the two basal joints. Thorax without promesonotal and meso-ëpinotal sutures, broadest through the pronotum, which is evenly rounded anteriorly and laterally, with well-developed neck; sides of meso- and epinotum subparallel; dorsal outline in profile convex at the anterior end of the pronotum and feebly convex thence to the epinotal spines which are rather closely approximated basally, as long as the nearly perpendicular declivity, straight, with moderately acute tips, direct backward, outward and somewhat upward. Petiole like that of *bruneri*, with similar node, as long as the peduncle and rising anteriorly at a less pronounced angle than in *affinis* Mann. The dorsal surface in profile is more rounded and less truncated than in either of these species; seen from above the node is short, scarcely longer than broad and less laterally compressed. Postpetiole nodiform, subhemispherical, slightly broader than long and about one-fourth broader than the petiolar node, more convex than in *affinis* and *bruneri*. Gaster proportionally large, subelliptical, about one and one-half times as long as broad, its anterior border concave at the insertion of the postpetiole; sting well-developed. Femora and tibiae incrassated but distinctly less so than in *bruneri* and *affinis;* basitarsi somewhat compressed.

Subopaque; occiput, petiolar node, postpetiole, gaster and legs shining. Mandibles striatopunctate; clypeus longitudinally rugulose. Head finely and evenly reticulate with superimposed longitudinal rugae, which diverge on the front but converge somewhat towards the occiput where they become distinctly reticulate like the rugae on the cheeks and gula. Pronotum irregularly and vermiculately, longitudinally rugose; mesonotum and base of epinotum regularly, transversely rugose, the rugae of the meso- and metapleurae longitudinal

and somewhat finer; epinotal declivity smooth and shining. Petiole and postpetiole, except the dorsal surfaces of their nodes, finely and evenly reticulate, with oblique rugae as in *bruneri* and *affinis*. Gaster superficially, legs and antennal scapes more sharply reticulate.

Erect hairs white, coarse, of uneven length, not abundant except on the scapes, shorter on the head and appendages than on the thorax and abdomen, absent on the pleurae.

Mandibles, clypeus, a small area of the front, thorax, peduncle of petiole, ventral portions of its node and of the postpetiole, brownish red; head black, with strong, metallic green reflections, which are also visible, though feebler, on the thorax. Antennae dark brown, except the clubs, which are black, as are also the gaster and dorsal portions of the petiolar node and postpetiole. Legs dark brown, except the tips of the coxae, the trochanters and the bases of the femora, which are brownish yellow.

Described from ten specimens taken by Dr. Darlington at Buenos Aires, in the Trinidad Mts., May 9–16, 1936, at altitudes between 2500 and 3500 ft.

Though closely related to *bruneri* and *affinis* this species can be readily distinguished by its less incrassated femora and tibiae, greenish head and thorax and transversely rugose meso- and epinotum.

### Macromischa affinis Mann

The typical form of this species is represented in the Museum of Comparative Zoology by four cotypes from Felton, Oriente, Cuba. It was not taken by Dr. Darlington but he secured instead the following three undescribed subspecies:

### Macromischa affinis umbratipes subsp. nov.

*Worker*. Length nearly 3.6 mm.

Rugae of the head, especially on the front and vertex, much feebler than in the typical *affinis*, but coarser on the thoracic dorsum and more undulating or vermiculate. Epinotal spines more divergent and distinctly turned upward at their tips. Postpetiole decidedly broader in proportion to its length. Head, thorax and pedicel more brownish red, postpetiole, node of petiole and femora dark brown, almost castaneous; tips of femora, entire tibiae and basitarsi black, dark brown in the fore legs; antennae brownish black throughout.

A single specimen from the coast below Pico Turquino, Sierra Maestra, June 26, 1936.

### Macromischa affinis laeta subsp. nov.

*Worker.* Length about 3.4 mm.

Peduncle somewhat longer than in the typical *affinis* and the preceding subspecies; epinotal spines more elevated; sculpture of both head and thorax finer, the thoracic rugae especially much finer and more numerous. Yellowish ferruginous; head slightly darker and more reddish; mandibles, clypeus, cheeks, neck, epinotal spines, petiolar peduncle, gaster and legs yellow; antennae, tips of femora, tips and bases of tibiae and entire basitarsi black; postpetiole and node of petiole ferruginous like the thorax. Lateral borders of first gastric segment and ill-defined bands at the posterior borders of the first, second and third segments, brown.

One specimen from the Sierra de Purial, north of Imias, 3500 ft., July 25, 1936.

### Macromischa affinis maerens subsp. nov.

*Worker.* Length 3.3–3.6 mm.

Head distinctly shorter, with more convex sides than in the preceding forms, almost semi-circularly rounded behind the eyes. Epinotal spines long, usually horizontal, with upturned tips. Sculpture very coarse, the rugae variable, on the head dense and longitudinal, interconnected by reticulations, diverging rather strongly on the front and vertex, equally coarse on the thorax, most regular and longitudinal on the pleurae, transverse anteriorly on the pronotum, on the mesonotum and base of epinotum rather regularly longitudinal in some specimens, in others irregular or vermiculate at least on portions of these regions; concentric or oblique rugae on sides of petiolar node and postpetiole strong. Deep castaneous brown; antennae, head, nodes of pedicel and the gaster black; mandibles, bases of antennal scapes, peduncle of petiole, coxae, terminal tarsal joints, sting and apical segments of gaster paler, reddish brown.

Described from 18 specimens taken in June, 1936 on the south side of Pico Turquino, Sierra Maestra, at altitudes between 1500 and 5000 ft.

This or a very similar form was seen by Mann. He mentions (1924) a single worker of *affinis* which he collected in the Sierra Maestra at an altitude of 2000 to 3500 ft. as being "considerably darker than those of the type series, with the head and thorax dark reddish brown and only the bases of the femora pale."

### Macromischa bruneri Mann

I have not seen the cotypes of this species, but the three following forms taken by Darlington are obviously subspecies of *bruneri*, which

is smaller than *affinis*, with more rectangular head, much shorter epinotal spines and the node of the petiole longer, more compressed laterally and with sloping instead of subperpendicular anterior surface.

MACROMISCHA BRUNERI PROXIMA subsp. nov.

*Worker.* Length 2.8–3 mm.

Head and thorax subopaque, finely and densely punctate, the former with a few longitudinal rugules just behind the frontal carinae and along the internal orbits, and in some specimens with a few interrupted rugules on the vertex; the thorax regularly longitudinally rugose on the sides, the pronotum above with finer, irregular or vermiculate rugae, those on the sides of postpetiole and petiolar node sharp and oblique. The color of the head, thorax and pedicel is paler than in the typical *bruneri*, being yellowish brown, the gaster, mandibular teeth and antennal funiculi, except the first joint, black, the legs, including the coxae, the mandibles, clypeus, antennal scapes and first funicular joint, clear yellow; tarsi and sting pale brown.

Described from 12 specimens taken on the south side of Pico Turquino, 1500–5000 ft., June 11, 1936.

Perhaps this form is merely a color variety. Mann describes the typical *bruneri* as being "brownish red, the gaster darker and the legs lighter than the rest."

MACROMISCHA BRUNERI ORNATIPES subsp. nov.

*Worker.* Length 3 mm.

Both the head and thorax more coarsely and more longitudinally rugose throughout than in the preceding subspecies. Head, thorax, and pedicel red, the head a little darker, gaster black with the base of the first segment reddish; legs yellow, the tips of the femora, bases and tips of tibiae and entire basitarsi dark brown; scapes and first funicular joint yellow, remaining funicular joints black.

Four specimens from the Sierra del Cobre, 3000–3800 ft., July 7, 1936.

MACROMISCHA BRUNERI IMITATRIX subsp. nov.

*Worker.* Length 2.8–3.4 mm.

Head somewhat larger and broader than in the preceding forms, with stouter antennae, the scapes shorter, not reaching the posterior border of the head by a distance equalling the diameter of their tips. Epinotal spines variable, in some specimens as long as the declivity and with slightly upturned tips, in others straight and distinctly

shorter. Head, thorax and pedicel subopaque, the head punctate, finely and somewhat reticulately longitudinally rugulose; thorax similarly sculptured but the rugae coarser and more vermiculate and in some specimens very irregular or obsolete on the mesonotum and base of epinotum. Dark brown; head and gaster and in some specimens also the antennae, or at least their clubs, black; peduncle of petiole and legs, except the swollen portion of the femora, pale and more piceous brown than the thorax.

Described from 9 specimens taken on the north side of Pico Turquino, Sierra Maestra, at altitudes between 4500 and 6000 ft., June 17, 1936.

In color and sculpture this subspecies resembles *affinis maerens*. There is a similar resemblance between *bruneri ornatipes* and *affinis laeta* but the differences in size, shape of head, length of epinotal spines and shape of the petiolar node show that these parallel forms really belong to distinct species.

### Macromischa azteca Wheeler var. maya var. nov.

*Worker.* Differing from the typical *azteca* in the petiolar node which is distinctly higher and shorter through its base, with its anterior face in profile rising with a distinctly larger and more rounded obtuse angle from the dorsal surface of the peduncle. The brown bands at the posterior borders of the gastric segments are usually absent or when present faint or obsolescent.

*Female.* Exhibiting the same differences in the petiole as the worker. The brown bands of the gaster are very distinct but only half as broad as in the typical form of the species.

Described from numerous specimens from four colonies which I found March 22, 1935, nesting in dead twigs of small trees at Mocá, on the western slope of the Volcan de Atitlan, Guatemala, at an altitude of 3500 ft. The typical Mexican form was also taken from twigs by Dr. E. Skwarra.

### Tetramorium guineénse (Fabr.)

A single worker from the coast below Pico Turquino, Sierra Maestra, June 26, 1936.

### Rogeria scabra Weber

One worker from Diaquiri, Oriente, June 30, 1936.

Cryptocerus (Cyathomyrmex) varians F. Smith

A single soldier from the coast below Pico Turquino, Sierra Maestra, June 26, 1936.

Atta insularis Guérin

A soldier and minor worker from the coast below Pico Turquino, Sierra Maestra, June 26, 1936.

Trachymyrmex jamaicensis cubaënsis subsp. nov.

*Worker.* Length 4.3–4.5 mm.

Differing from other forms of the species in the longer and more acute anterior and posterior occipital teeth, longer and very slender epinotal and posterior mesonotal spines. The epinotal spines are almost filiform and slightly curved forward at their tips. The color, too, is peculiar, being opaque, coal-black, with a bluish bloom, the mandibles, antennae, legs including coxae, epinotal spines and metasternal angles, ventral portion of petiole and posterior portion of postpetiole, dull red.

Three specimens from the coast below Pico Turquino, Sierra Maestra, June 26, 1936.

No form of *T. jamaicensis* has been found in Cuba hitherto, though several subspecies and varieties are known from Jamaica, Porto Rico, the Virgin Islands, Hispaniola, St. Vincent and the Bahamas.

## Subfamily FORMICINAE

Camponotus (Tanaemyrmex) santosi Forel

Three winged females and a worker minor from Buenos Aires, Trinidad Mts., 2500–3000 ft., May 9, 1936.

Camponotus (Tanaemyrmex) santosi pazosi Santschi

A major and a minor worker from the south side of Pico Turquino, Sierra Maestra, 3000–5000 ft., July 13, 1936, and a minor worker from Yunque de Baracoa, July 13, 1936.

Camponotus (Tanaemyrmex) ramulorum Wheeler var.

A single minor worker from the south side of Pico Turquino, 3000–5000 ft., June 1936, differs in coloration from the known Cuban forms of this species, but cannot be given a name till the major worker has been seen.

### Camponotus (Myrmobrachys) planatus Roger

A single worker from the coast below Pico Turquino, Sierra Maestra, June 26, 1936.

### Camponotus (Myrmeurynota) gilviventris Roger

In his original description of the workers of this ant Roger (1863) mentions considerable variation in color. He says that the "head and thorax are opaque black, the gaster red or black, the legs sometimes brown, the antennal scape either entirely black or half or entirely, usually pale red." Mann, who redescribed the species from specimens which he took at Mina Carlota, in the Trinidad Mts., and Pinares, in Oriente, says nothing about these variations. His specimens, represented by three major workers in the Museum of Comparative Zoology, are described as having the dorsal integument as well as the hairs of the gaster red, "with a black blotch at middle of base of first segment and blackish margins of the other segments," and, I may add, black legs, with brownish tarsi. Dr. Darlington's material, consisting of five, unfortunately small, series of workers from as many localities, show clearly the variations described by Roger from specimens collected by Gundlach, probably from different colonies or localities. The form described by Mann should, of course, be regarded as the typical form of the species. It is represented in Dr. Darlington's material by five major workers and a single minima worker from Yunque de Baracoa, 1000–1800 ft., July 13, 1936. The other specimens belong to the following varieties to which neither Roger nor Mann assigned names:

### Camponotus (Myrmeurynota) gilviventris var. refectus, var. nov.

*Worker.* Differing from the typical *gilviventris* in having the dorsal as well as the ventral integument of the gaster black throughout, the mandibles, cheeks and anterior border of the clypeus in the largest specimens only slightly tinged with red, the legs black, the antennae dark brown or blackish, with the basal half or two-thirds of the scapes red.

A major and a media worker from Buenos Aires, Trinidad Mts. (type locality), 2500–3500 ft., May 9–11, 1936, and a major and two minor workers from Los Llanos, Eastern Oriente, 1000–2000 ft., July 16–30, 1936.

### Camponotus (Myrmeurynota) gilviventris var. renormatus var. nov.

*Worker.* Also with the gastric integument black throughout but with the mandibles, antennae and legs red, the terminal joints of the funiculi darker in the larger individuals.

Four mediae from the coast below Pico Turquino, Sierra Maestra (type locality), June 26, 1936, and a media and minor from the Sierra del Cobre, Eastern Oriente, 3000–3800 ft., July 3, 1936.

### Camponotus (Myrmemyrnota) thysanopus sp. nov.

*Worker media and minor.* Length 3–4 mm.

Closely related to *albistramineus* Wheeler of Haiti but smaller. Head trapezoidal, shorter, not longer than broad, less narrowed anteriorly and with distinctly less convex cheeks and posterior border. Eyes more convex, the carinae between their posterior orbits and the corners of the head less pronounced. Antennae slender, scapes extending about two-fifths their length beyond the posterior border. Thorax shaped much as in *albistramineus*, but lower, dorsally and laterally less convex and with distinctly more sloping epinotal declivity. Petiolar scale narrower but thicker anteroposteriorly, as thick above as below, with blunter and seen from behind less broadly rounded posterior border.

Sculpture like that of *albistramineus*, but the gaster is shining above as well as below with its dorsal surface sharply transversely shagreened instead of reticulate and with more pronounced transverse piligerous punctures.

Pilosity similar to that of *albistramineus* but the flattened snow-white hairs are more abundant on the dorsal surface, especially on the head and thorax, and the erect hairs are more obtuse and more flattened, like the appressed hairs, than in the Haitian species. Moreover, the flexor border of each femur bears a more conspicuous fringe of these longer hairs.

Black, with red mandibles and antennae, like *albistramineus*, but with the legs also red instead of black; coxae darker and more brownish.

Described from three media workers and a minor from the Sierra de Purias (type-locality), north of Imias, 3500 ft., July 25, 1936, and a single media from the Sierra del Cobre, 3000–3500 ft., July 3, 1936.

These specimens indicate that the type of *albistramineus* is a media worker and not a minor, as stated in my paper of 1936.

CAMPONOTUS (MANNIELLA) MICROSITUS sp. nov.

*Worker minor.* Length 3 mm.

Differing from the described species of Manniella in its very small size and in color. Head subtrapezoidal, narrowed anteriorly, with convex sides and very convex vertex and posterior border. Eyes large and moderately convex, half as long as their distance from the anterior corners. Mandibles narrow, with oblique, apparently 4-toothed apical borders. Clypeus feebly and evenly convex, ecarinate, with the anterior border projecting and broadly rounded in the middle, narrowly sinuate on each side. Frontal area transverse, indistinct; frontal carinae rather straight, strongly diverging posteriorly. Antennae slender; scapes extending about one-fourth their length beyond the median occipital convexity of the head. Thorax narrower than the head, short and high, about twice as long as broad, with distinct but not impressed promesonotal and without traces of a mesoëpinotal suture, from above subtriangular, broad through the pronotum, rapidly narrowing to the posterior end of the epinotum, which is less than half as broad as the pronotum, the pleurae distinctly and evenly convex. From above the pronotum is twice as broad as long, semicircular anteriorly, somewhat flattened above and submarginate at the sides; the thorax in profile evenly and rather strongly convex as far back as the epinotal declivity which is sloping, distinctly concave and as long as the distance from its anterior end to the promesonotal suture. Petiolar scale rather thick, as thick above as below, with flattened anterior and posterior faces and very blunt superior border, which is broadly rounded when seen from behind. Gaster about as large as the thorax. Legs moderately long, fore femora incrassated.

Shining; mandibles subopaque, very finely granular. Head, thorax, petiole and appendages delicately reticulate, the meso- and metapleurae more coarsely and therefore appearing more opaque. Gaster finely, transversely shagreened or striolate.

Erect hairs yellow, sparse, rather short, bristly and of uneven length, on the legs present only at the tips of the femora. Appressed hairs, or pubescence sparse, coarse, long on the pronotum and first gastric segment, shorter and more numerous on the clypeus and cheeks.

Head, thorax, petiole and first gastric segment red, remainder of gaster black; mandibles, posterior portion of head and first gastric segment more brownish red; legs and antennae somewhat paler and more reddish yellow.

Described from a single specimen taken on the coast below Pico Turquino, Sierra Maestra, July 26, 1936.

Notwithstanding its minute size and aberrant coloration I believe that I am right in referring this ant to the subgenus Manniella. At least there is no other subgenus of Camponotus into which it would fit more naturally.

### Prenolepis gibberosa Roger

The large, typical form of the species, with opaque gaster, as determined by Aguayo.

Nineteen workers from Buenos Aires, Trinidad Mts., 2500–3500 ft., May 9–14, 1936, and the south side of Pico Turquino, Sierra Maestra, 3000–5000 ft., June 1936.

### Prenolepis gibberosa albimaculata Santschi

This small form with conspicuous white knees, and terminal antennal and tarsal joints, erroneously described by Mann as the typical *gibberosa* of Roger and redescribed by Santschi as a variety of that species, deserves, in my opinion, to rank as a subspecies. According to Mann, it is, unlike the typical *gibberosa*, confined to Oriente.

Seven workers from the Sierra de Purias, near Imias, 3500 ft., July 25, 1936 and Yunque de Baracoa, Oriente, July 13, 1936.

### Nylanderia anthracina (Roger)

Twelve workers from the south side of Pico Turquino, Sierra Maestra, 3000–5000 ft., June 1936, and the Sierra de Purial, north of Imias, 3500 ft., July 25, 1936.

### Nylanderia myops (Mann)

Fourteen workers from Buenos Aires, Trinidad Mts., 2500–3500 ft., May 9, 1936, and the Sierra del Cobre, Oriente, 3000–3800 ft., July 7, 9136.

## A List of the Described Forms of Macromischa Sens. Lat.

### Subgenus Macromischa Roger

*affinis* Mann (1920) ☿ ..... Cuba
  subsp. *laeta* Wheeler (1937) ☿ ..... Cuba
  subsp. *macrens* Wheeler (1937) ☿ ..... Cuba
  subsp. *umbratipes* Wheeler (1937) ☿ ..... Cuba
*allardycei* Mann (1920) ☿ ♀ ..... Bahamas
*androsana* Wheeler (1905) ☿ ..... Bahamas

*annectens* Wheeler (1931) ☿ ..... Mexico
*azteca* Wheeler (1931) ☿ ♀ ♂ ..... Mexico
var. *maya* Wheeler (1937) ☿ ♀ ..... Guatemala
*barbouri* Aguayo (1931) ☿ ..... Cuba
*bruneri* Mann (1924) ☿ ..... Cuba
subsp. *imitatrix* Wheeler (1937) ☿ ..... Cuba
subsp. *ornatipes* Wheeler (1937) ☿ ..... Cuba
subsp. *proxima* Wheeler (1937) ☿ ..... Cuba
*chloana* Wheeler (1937) ☿ ..... Cuba
*creightoni* Mann (1929) ☿ ♀ ..... Isle of Pines
*darlingtoni* Wheeler (1937) ☿ ..... Cuba
*dissimilis* Aguayo (1932) ☿ ..... Cuba
*flavitarsis* Mann (1920) ☿ ♀ ♂ ..... Guatemala
*foreli* Aguayo (1931) (= *petiolata* Forel) ☿ ♀ ..... Mexico
*fuscata* Mann (1920) ☿ ..... Guatemala
*isabellae* Wheeler (1908) ☿ ♀ ♂ ..... Porto Rico
subsp. *mutica* H. M. Smith (MS) ☿ ..... Porto Rico
*laevissima* Wheeler (1911) ☿ ..... Mexico
*lucayensis* Forel (1901) ☿ ..... Bahamas
*luciliae* Mann (1935) ☿ ..... Guatemala
*manni* Wheeler (1931) ☿ ..... Cuba
var. *villarensis* Aguayo (1931) ☿ ..... Cuba
*melanocephala* Wheeler (1931) ☿ ♀ ..... Cuba
*myersi* Wheeler (1931) ☿ ♀ ..... Cuba
*opalina* Wheeler (1937) ☿ ..... Cuba
*pastinifera* Emery (1894) ☿ ♀ ♂ ..... Bahamas, Cuba
var. *opacipes* Wheeler (1905) ☿ ..... Bahamas
*platycnemis* Wheeler (1937) ☿ ..... Cuba
*porphyritis* Roger (1863) ☿ ..... Cuba
var. *jaumei* Santschi (1931) ☿ ..... Cuba
var. *latispina* Wheeler (1931) ☿ ..... Cuba
*purpurata* Roger (1863) ☿ ♀ ..... Cuba
*sallei* Guérin (1852) ..... Santo Domingo
subsp. *haytiana* Wheeler and Mann (1914) ☿ ♀ ♂ . Haiti
subsp. *opacinoda* Wheeler (1931) ☿ ..... Haiti
*salvini* Forel (1899) ☿ ..... Panama
var. *obscurior* Forel (1899) ☿ ..... Panama
*scabripes* Mann (1920) ☿ ..... Cuba
var. *brunnipes* Wheeler (1937) ☿ ..... Cuba
*scandens* Mann (1922) ☿ ..... Honduras
*schwarzi* Mann (1920) ☿ ..... Cuba

*skwarrae* Wheeler (1931) ☿ ♀ ..... Mexico
*splendens* Wheeler (1905) ☿ ♀ ♂ ..... Bahamas
*squamifera* Roger (1863) ☿ ..... Cuba
*subditiva* Wheeler (1903) ☿ ☿ ..... Texas
*violacea* Mann (1924) ☿ ..... Cuba

Subgenus Croesomyrmex Mann

*aguayoi* Wheeler (1931) ☿ ..... Cuba
var. *arcberi* Wheeler (1931) ☿ ..... Cuba
var. *bierigi* Santschi (1931) ☿ ..... Cuba
subsp. *natenzoni* Aguayo (1931) ☿ ..... Cuba
*barroi* Aguayo (1931) ☿ ..... Cuba
*bermudezi* Wheeler (1931) ☿ ..... Cuba
var. *graeilis* Aguayo (1932) ☿ ..... Cuba
var. *mutabilis* Wheeler (1931) ☿ ..... Cuba
*gundlachi* Wheeler (1913) ☿ ..... Cuba
*iris* Roger (1863) ☿ ..... Cuba
var. *rufithorax* Wheeler (1931) ☿ ..... Cuba
var. *tristis* Wheeler (1931) ☿ ..... Cuba
*lugens* Roger (1863) ☿ ♀ ..... Cuba
*poeyi* Wheeler (1913) ☿ ..... Cuba
subsp. *rugieeps* Aguayo (1932) ☿ ..... Cuba
*punicans* Roger (1863) ☿ ..... Cuba
*versicolor* Roger (1863) ☿ ♀ ..... Isle of Pines
*wheeleri* Mann (1920) ☿ ♀ ..... Cuba
subsp. *petri* Aguayo (1931) ☿ ..... Cuba

Subgenus Antillaemyrmex Mann

*albispina* Wheeler (1908) ☿ ♀ ..... Culebra Island
var. *pallipes* Mann (1920) ☿ ♀ ..... Mona Island
*ciferrii* Menozzi (1930) ☿ ..... Santo Domingo
*flavidula* Wheeler and Mann (1914) ☿ ..... Haiti
*floridana* Wheeler (1931) ☿ ..... Florida
*pulchella* Emery (1894) ☿ ♀ ..... St. Thomas
*terricola* Mann (1920) ☿ ♀ ..... Cuba
*torrei* Aguayo (1931) ☿ ..... Cuba

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**Bulletin of the Museum of Comparative Zoölogy**

AT HARVARD COLLEGE

VOL. LXXXI, No. 4

# INSECT POLYEMBRYONY AND ITS GENERAL BIOLOGICAL ASPECTS

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BY FILIPPO SILVESTRI

WITH FOUR PLATES

CAMBRIDGE, MASS., U. S. A.

PRINTED FOR THE MUSEUM

AUGUST, 1937

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*No. 4.—Insect Polyembryony and its General Biological Aspects**

By Filippo Silvestri

Polyembryony means the origin of two or more individuals instead of one from a single egg. This process was first known (1879) in an earthworm, in which the egg produces two individuals instead of one; afterwards for some small marine Bryozoa (1893) whose eggs each produce numerous individuals by a sort of fission. The phenomenon attracted more attention when Marchal (1902–05) discovered it in some hymenopterous insects, which are parasites on other insects, and Silvestri discovered the most remarkable case known up to the present, that of another insect parasite, *Litomastix truncatellus.*

A brief historical summary of the studies on Insect Polyembryony follows.

## Historical summary

Bugnion published in 1891 a paper on *Ageniaspis fuscicollis* (Dalm.)[1] treating the postembryonic development, the anatomy and the habits; in the first part of the paper he also called attention to the novel fact that the embryos were placed "dans un tube flexueux qui flotte dans la lymphe de la chenille (of *Hyponomeuta*) á coté de l'intestin."

He did not suspect the origin of all the embryos of a chain from one egg, and considered the entire tube (containing the embryos) as an eggs, derivative: the epithelium existing around the tube as a formation of the embryos, serosa and amnios, and the substance in which the embryos are immersed (called, later, trophamnios by Marchal) as originating from the eggs, material comprised between the embryos and the amnios. He could not be precise as to the time of the oviposition in the host, and made a supposition which proved erroneous, but honestly at the end of his paper wrote: "malgré ses imperfections j'espère que mes recherches en susciterons bientôt de nouvelles et de plus complètes sur l'organisation et les moeurs si dignes d'interet des Hyménoptères parasites."

The hope expressed by Bugnion was realized by Marchal, who studied the same species of parasite and some others and with diligent researches (1898–1904) cleared up various points left uncertain by his predecessor and, above all, discovered polyembryony in *Ageniaspis fuscicollis* and in *Platygaster zosine*[2] Walker.

*Address delivered as part of the Harvard Tercentenary Conferences.

[1]Syn. *Encyrtus fuscicollis* Dalm.

[2]Syn. *Polygnotus minutus* Marchal.

The principal and new results of Marchal's researches were the following: 1) the egg of *Ageniaspis fuscicollis* is laid in the egg of *Hyponomeuta malinellus* Z., but continues its development into the larva. 2) in the developing egg (where he observed a first stage with 5 nuclei: 4 small and 1 larger and of very different appearance) there are distinct embryonal nuclei and the so called "paranucleus"; from the former (together with the respective cytoplasm) originate all the embryos of the chain, from the second the nucleus of the trophamnios.

He described the further development, the paranucleus (trophamnios), the adventitious cyst, and made interesting considerations on sex determination and, generally, on the polyembryony discovered by him in the Hymenoptera and in other animals; but, as Bugnion before him, did not recognize the true nucleus in the oocyte, and considered as the nucleus what is really the nucleolus (or oosome). He did not study the maturation and the fecundation of the egg, and therefore was not in a position to define the different origin of the embryonal cells and the paranucleus.

The gaps left by Marchal were filled a short time later (1905) by Silvestri with a first study on *Litomastix truncatellus,* in which he established the exact structure of the complete oocyte, the formation of the polar bodies, the fecundation, the first stages of cleavage, the localization of the sex primordium. Moreover he followed the entire polyembryonal development, which resulted somewhat differently from that of *Ageniaspis,* concluding with the formation of about a thousand embryos, which for the most part transform into normal larvae, destined to give adults, and in very small part to originate sterile larvae, called asexual.

In 1907 Silvestri published his researches on the polyembryonal development of *Ageniaspis fuscicollis* and a subspecies of the same (*A. fuscicollis prasincola* Silv.), and confirmed what he had discovered in *Litomastix* regarding the egg structure, the maturation, the fecundation and the origin of trophamnions. He investigated the monembryonal development of Chalcididae, also parasites of insects, contrasting the differences with polyembryonal forms. Later (1908) the first stages of development of another Chalcid (*Prospaltella*), with continous parthenogenesis, demonstrated that in it the egg has no oosome (nucleolus) and gives a single polar body only, whereas the other monembryonal parasites studied have normal egg structure.

Martin (1914) took up the study of *Ageniaspis fuscicollis,* and added a few particulars on the development of the oocyte in the ovarium, but otherwise confirmed what Marchal and Silvestri had made known.

Hegner (1914) studied the origin of the sexual cells determinant in *Copidosoma gelechiae*, and described the development of the oocyte in the ovarium, concluding that it was derived from the fusion of two eggs, and that the oosome (nucleolus) was the nucleus of one of the two eggs. This mistake was immediately (1914) corrected by Silvestri in a note on *Copidosoma buyssoni* Mayr, and later by Hegner himself.

Silvestri, continuing the study of the biology and development of parasitic Hymenoptera (1915–1916), extended his researches to other species of Chalcididae and a species of the Proctotrypidae also of monembryonal development (*Platygaster dryomyiae* Silv.), and found some new particulars, but confirmed the results of the preceding researches on the egg structure, polar bodies, presence of oosome (nucleolus) in the bisexual Chalcididae and its absence in the unisexual Chalcididae and Proctotrypidae.

Patterson (1915) published a first paper on the polyembryonal Hymenoptera, treating *Copidosoma gelechiae*, but he studied the advanced stages only, which are similar to those of *Litomastix*, adding some notes and figures of abortive embryos. The same author undertook afterward a series of researches on *Litomastix floridanus*[1] Ashm., which began in 1917 and were concluded in 1921. In collaboration with Porter he studied the spermatogenesis for the first time, but for the egg structure, maturation, fecundation, segmentation, formation of asexual larvae, he confirmed completely the discoveries of Silvestri, merely giving a slightly different interpretation of the nature of the asexual larvae, and admitting the origin of males from fecundated eggs and of females from virgin eggs.

In North America, Leiby also undertook the study of the development of *Copidosoma gelechiae*, with results similar to those known for *Ageniaspis*, *Litomastix*, and *Copidosoma buyssoni*, but he should have been able to ascertain the reduction of the number of chromosomes during the maturation from 16 to 8. The same author in collaboration with Hill studied the development of *Platygaster hiemalis* Forbes (1923) and of *Platygaster zosine* Walker[2], finding in the former an egg structure, maturation, and fecundation similar to that described by Silvestri in *Platygaster dryomyiae*, and in *P. hiemalis* a monembryonal development, erroneously considered as in part twinning.

In 1931 polyembryony was discovered in *Macrocentrus gifuensis* Ashm. of the Braconidae, a parasite of *Pyrausta nubilalis* Hübner, by Parker. He was not able to work out the maturation and the first

[1]Syn. *Paracopidosomopsis floridanus.*
[2]Syn. *Platygaster vernalis.*

stages of cleavage, but ascertained that the parasite lays the egg in the first larval stage and described a polyembryonic process somewhat similar to that of *Litomastix*.

Daniel (1932) published a paper on polyembryonal development in *Macrocentrus ancylivorus* Rohwer, but stated that "only one parasite larva matures from each host larva."

## Sketch of the development of *Litomastix truncatellus*.

There is no point in giving here all the particulars of development of the polyembryonic species. I advise those particularly interested to consult the papers of Marchal, Silvestri, Patterson, Leiby and Parker.[1] I shall therefore present a brief sketch of the development of *Litomastix truncatellus* before discussing the general biological aspects of insect polyembryony.

This wonderful creature *Litomastix* (Figs. 2-3) is a small black insect about 1mm. in length including the wings. It lives in the adult stage only a few days, taking for nourishment some water and a small quantity of sweet substance, secretions of plants or animals such as plant lice. The male insect in adult life has the sole function of inseminating the female, but the latter, whether fertilized or not, is capable of depositing eggs, which in either case are able to develop. If the eggs are inseminated females only are produced, as in the honey bee; if the eggs are not inseminated the offspring are all males. The instinct of the female from the moment she emerges from the skin of the host leads her to lay eggs; therefore she is seen crawling around on the leaves and branches of plants on which these animals spend their life with the head low and the antennae extended forward and touching the surface with their tips, beating them like microscopic hammers in order to find what they want for depositing their eggs; that is, the eggs of another insect, a moth of the genus *Plusia*, which lives on the leaves of the cabbage and some other herbaceous plants.

As soon as a female in her persistent search has touched an egg of the moth, she rapidly turns a little about it, mounts on it, stops, pushes down the ovipositor, a short needle-shaped abdominal appendage, thrusts it through the shell of the egg, and lays one egg in the egg of the moth. She turns a little on the moth egg, and continues her search for other eggs until all her eggs—about 100—are deposited. This continues with some intervals during several days. Generally

[1] A book on the subject of insect polyembryony is in preparation, and will be published as soon as researches on polyembryonal *Macrocentrus* are concluded.

one or two eggs of *Litomastix* are laid in one egg of the moth. Both the host egg and the parasite egg continue to develop. There are species of parasites, such as the *Trichogramma* of the European corn borer, which eat the material of the host eggs, consuming all of it, and transform themselves under the shell of the egg, from which they emerge by making a small hole through it, but the egg of *Litomastix* develops gradually first in the egg (Fig. 8), later in the body of the caterpillar, and concludes its development only in the last stage of the caterpillar's life.

The extraordinary process of polyembryony consists in the case of *Litomastix* in the fact that the egg in the first stage of its development (cleavage) does not, like most eggs, form a relatively small number of cells which remain together in groups and gradually differentiate in parts, organizing one individual; instead it multiplies in enormous numbers and forms an elongated asymmetric cellular body which is constricted by an external membrane derived also from a part of the egg, and by a sort of strangulation (Figs. 20–21) is separated into pieces numbering about a thousand. All these small pieces, or rather groups, are formed in the body of the caterpillar, and attach themselves to the walls of the various internal organs of the caterpillar and there absorb their nourishment, which is the lymphatic material of the host. Each group grows into an embryo which at last transforms into a small wormlike larva about ½ mm. long when completely developed (Fig. 23). By this process, which has been very briefly recapitulated, more than 100 individual larvae of *Litomastix* develop from one egg within first the host egg and later the moth *Plusia*. They remain under the skin of what once was a caterpillar, and transform into pupae, deforming the appearance of the body. Through the skin of the carcass (Figs. 5–7) the small oval puparia are visible. Each contains a pupa which will transform into an adult; this will come out well winged to begin another generation. From each egg of *Litomastix* originate about 1000 adults, but since two or more eggs are often deposited, more than 3000 adults have sometimes been counted emerging from one host. In connection with this extraordinary process of development, Silvestri discovered very peculiar phases in the development of the egg cell, more particularly also the formation of a number of asexual larvae, which live a few days, lacking sexual cells and sometimes other organs. The life cycles of *Litomastix* from egg to egg in the summer of South Europe last about 30 to 40 days. Here in America there is another *Litomastix* (*L. floridanus*) whose life history is similar.

The more important scientific results of the researches on *Litomastix truncatellus are:*

1. The egg in the primary oocyte stage (Fig. 9) has a very thin chorion with a small micropyle at the anterior (cephalic) end, the ooplasm very poor in deutoplasm, the nucleus very small and placed in the anterior part of the egg, and an oosome (or nucleolus or sexual cell determinant) bigger than the nucleus and placed in the posterior half of the egg.
2. The egg maturation (Figs. 10–12) is typical, and is the same for both fecundated and parthenogenetic eggs, and the polar bodies remain in the ooplasm (Figs. 13–17) forming the paranucleus.
3. The egg cytoplasm divides into two parts, one of which containing the paranucleus will form an involucrum for the other part, which is destined to give rise to the embryonal cells (Figs. 19–22).
4. The oosome or nucleolus (Fig. 18)) is distributed to a few embryonal cells destined to become sexual cells.
5. During the constriction and separation of the groups of embryonal cells, the majority contain sexual cells and will give normal sexual larvae (Fig. 23); a small number will lack sexual cells and will give very different asexual larvae (Figs. 24–25).

Having concluded our brief summary of the study of insect polyembryony, it now remains to consider its contribution to points of general biological interest: 1. egg organization; 2. egg maturation and fate of polar bodies; 3. egg fecundation; 4. egg cleavage; 5. origin of two kinds of larvae from the same egg; 6. causes of polyembryonic development; 7. sex determination; 8. sexual cells determination.

## 1. Egg organization

We know from the studies of egg structure and development (published especially from 1900 on) of numerous species of Metazoa belonging to different classes, that the eggs, in conformity with their behavior in giving rise to new individuals, can be divided into two groups; those having a mosaic structure, viz. localization of future parts of the embryo, and eggs capable of regulation, totipotent. (Between the two extremes, naturally, there are intermediate types.)

Eggs manifest their potentiality, generally, after fecundation; but those of some species before insemination and maturation, when the oocyte of the first order is just completed, show a different structure of the cytoplasm in the various distributions of place and of quantity of

the protolecithe and of the deutoplasm, or a different coloration of ooplasme zones, either a natural coloration, or an artificial one obtained by means of vital staining after the Vogt method.

The egg of polyembryonic Hymenoptera, when the oocyte of the 1st order is complete, is, as we have seen, characterized in all the species by its smallness (about 20 to 150$\mu$), with a cytoplasm lacking or almost lacking deutolecithe, and having, as an homolecitic egg type, the small yolk and fat granules scattered through it, nearly homogeneously except along the sides. Moreover the egg of polyembryonic Chalcididae and Braconidae is provided with an oosome as well as a nucleus, in the posterior half, which is the sex primordium; therefore this kind of egg shows, besides the usual polarity and symmetry common to the insect's egg in its form, micropyle and nuclear[1] position, a determinate sexual region, which will remain enclosed by the first sexual cell, which is one of the four in the 2$^{d}$ stage of segmentation.

This segregation of the sex primordium early in the egg, was also demonstrated by me for the eggs of Chalcid and Braconid parasites with monembryonal development, and by other authors particularly for the egg of Diptera (Kahle, 1908; Hasper 1911), of Coleoptera (Hegner 1909) and in Crustacea (Haecker 1897, 1903; Amma 1911). In *Sagitta* (Elpatievsky 1909, Büchner 1910) this type of segregation always begins to be visible during the development of the 1$^{st}$ order oocyte. I could not detect any sign of it in a Chalcid (*Prospaltella berlesei* How.), which is a continuously parthenogenetic (thelytocous) insect.

The eggs of *Proctotrypidae Platigasterinae* either poly-or monoembryonic, which are smaller (15–20$\mu$ in length and 8$\mu$ in width) and destitute of deutolecithe, do not reveal any oosome; therefore they have an ooplasme completely (at least apparently) equipotent.

## 2. Egg maturation and fate of polar bodies

*Inseminated egg.* The study of the chromosome equipment of the polyembryonic species of the Chalcididae, Braconidae and Proctotrypidae has not yet been adequately made, but the egg maturation phases have been followed in all the species and can be defined as being similar (except the chromosome number) to that of other insects, and like typical Metazoa; therefore the result of maturation for these

[1]It is understood that the bilateral symmetry of the egg is not perfect, because the principal axis of symmetry does not pass exactly through the middle of the nucleus, but in the 1st order, the oocyte is very near to that position, as is also the case with the oosoma.

particular Hymenoptera is also to reduce the diploid number of nucleus chromosomes of the 1st order oocyte to haploid.

*Parthenogenetic egg.* The unfertilized eggs of the same species of polyembryonic Hymenoptera form two polar bodies, as in the fertilized; therefore at the end of maturation they have a haploid pronucleus.

The great difference between polyembryonal and most[1] of the monoembryonal species lies in the fate of the polar bodies, and also in the separation of that part of the ooplasm containing them, from the part comprising the 1st nucleus of segmentation and the oosome.

Until 1905, the year in which I published the discovery of the fate of polar bodies in *Litomastix truncatellus*, it was known that the polar bodies with their set of chromosomes, and a very small quantity of cytoplasm, were extruded from the egg; they were justly considered as abortive eggs because of their lack of cytoplasm and other parts peculiar to eggs.

In some species of Metazoa (*Limax*, Kofoid 1895, and Meisenheimer 1896; *Asterias*, Andrews 1898 and 1899), the polar bodies extruded from the egg were observed to remain visible longer, to grow larger, and, in the case of *Asterias* to form pseudopods similar to that of blastomeres, but afterwards to degenerate without showing any functional activity connected with the embryonal development.

Polar bodies had been observed in some Crustacea (Häcker 1895) to remain in the ooplasm, as with many insects (Henking 1888, 1890, 1892); in the eggs of some species they had been noted to make hernia on the surface, and in eggs of other species to unite with the chromosomes in a small chromatinic group. But they were always destined to degenerate and to vanish without taking any part in the development of such an insect. Petrunkewitch alone (1902), after having followed the exact formation of the polar bodies in the parthenogenetic eggs of bees, had noticed that the 2d polar body copulated with the inner part of the divided 1st polar body, giving rise to the male germ cells. But it was demonstrated that owing to his incomplete series of stages he was wrong, since the polar bodies of the bee also degenerate.

In *Litomastix*, as in the other polyembryonic Chalcididae, we have, at least up to the present, the unique fact that the polar bodies remaining in the ooplasm unite with the chromatin and form a triploid polar nucleus, which will divide repeatedly mitotically, or the 3 nuclei of the polar bodies can form one or two groups (*Ageniaspis*), or all

[1] I write "most" and not all, because in the monembryonal *Platygaster dryomyiae* the fate of the polar bodies is the same as in the polyembryonal species.

three can remain separated and produce nuclei, which pass first to the quiescent stage and afterward grow larger, dilate, branch out and can divide directly, like the polar ooplasm (called now trophamnios) in which they are imbedded.

The fusion of the polar bodies was a fact already known in many species of insects. An attempt to demonstrate their behavior up to the 3d division of segmentation was described by me (1915) for *Encarsia parthenopea* (*Chalcididae*), but in this case also the ooplasm takes no visible part in the division of the polar bodies, which degenerate.

In the polyembryonic species of Hymenoptera, with the reconstitution of a polar nucleus by fusion of the two nuclei of the 1st polar body with that of the 2d polar body, there is, in the cytoplasm, an incipient activity connected with that of the nuclei. The whole egg cytoplasm becomes divided into two fields: one as the result of the energetic action of the polar nucleus (or nuclei), and one as the result of the action of the 1st segmentation nucleus. Owing to the continuing and increasing nuclear activity of these two cytoplasmic fields during the first segmentation division, the ooplasm divides into 2 parts.

Considering this fact in its general biological aspect, it demonstrates that the egg of these Hymenoptera can lose a third or more of its cytoplasm, and will maintain unaltered the potentiality of development, a fact ascertained experimentally in or for the merogonic development of the eggs of *Nemertina* (Wilson 1903) and Echinidi (Hertwig O. et R, 1887). In these the egg was divided by one or another method into two or more pieces, one nucleate and the others enucleate. Normal development of the nucleate piece ensued as well as the enucleate piece, if a spermatozoon was introduced into it, thereby supplying a nucleus.

The egg of these polyembryonic Hymenoptera, which we have shown to be supplied with polarity, symmetry, and sexual localization, is otherwise isotropous for the organo-formative substances, because it can lose a great part of its cytoplasm without preventing later embryonic development. Perhaps, during the formation of polar bodies, there is a differentiating exchange of qualitative substances between the polar and the embryonic ooplasm.

From a general point of view, the separation of a notable part of the ooplasm together with the polar bodies to form a protective involucrum in *Litomastix*[1], or both protective and assimilative in *Copidosoma, Ageniaspis, Macrocentrus, Platygaster*, demonstrates a morphogenetic

[1]The polar involocrum (trophamnios) can have a metabolic function during the first days of development in *Litomastix* also, but afterward it seems quite certain, has only a protective one.

and functional plasticity which is innate in the organism in all its stages, viz: the polar bodies retain their primitive function in these species of polyembryonic Hymenoptera. Later, in the adaptive perfecting of such species as internal parasites, the polar bodies are diverted to another, new, function, together with a part of the ooplasm. Thus in *Litomastix*, the 3 haploid polar nuclei unite to form a triploid nucleus, which is capable of regular mitotic division. Meanwhile in the egg of *Copidosoma*, *Ageniaspis*, *Macrocentrus*, and *Platygaster*, the nuclei derived from the polar bodies are able to increase, forming polymorphic nuclei capable of various unequal direct divisions. In both cases the polar ooplasm remains undivided, but in the first, after the 6th division of segementation, it becomes a laminar sheet; in the second it becomes an involucrum with a notable thickness in comparison to the encircled material.

### 3. Egg fertilization

The known polyembryonal Hymenopterous species are all arrhenotic and have a fertilizing process similar to that of other Metazoa.

The fecundation of these polyembryonal insects confirms in a general way the theory that fecundation has the essential function of carrying half of the chromosomes to the egg, which has extruded the same number in the polar bodies, to reestablish in this manner the diploidism in the first nucleus of segmentation and to bring in this manner genes of another individual, to favor the amphimixis. In these Hymenoptera fecundation also has the function of determining the female sex.

Other theories of the function of fecundation, such as that urging its necessity for transforming the egg from a monocentric to a dicentric system (Dalcq 1928), have no absolute general value, because in these Hymenopterous species, bees, and all other animals with a facultative parthenogenesis and an arrhenotic parthenogenesis, the unfertilized egg, which has also formed and separated the 2$^{d}$ polar body and has (at least until proof to the contrary) a haploid nucleus, is able to develop in exactly the same manner as the inseminated egg, forming a normal spindle after the first division of segmentation.

### 4. Cleavage of the egg

The cleavage (or segmentation) of the egg of the polyembryonic species of Hymenoptera, as we have seen, takes place regardless of whether the first nucleus of segmentation be derived directly from the

female pronucleus alone, or from the conjugation of the female and male pronuclei. Cleavage is always total, equal (or adequal) and synchronous also in the somatic blastomeres, but somewhat heterochronous, in comparison with the somatic (in the Chalcididae and Braconidae) in the sexual blastomeres which include the oosoma. It is completely synchronous in the Proctotrypidae, in which such a determinant sex-germ has not yet been distinguished. This kind of cleavage is found neither in other insects nor in Hymenoptera of the same families, therefore this type of cleavage may be considered an adaptation of these eggs to polyembryony and not to the parasitic life or to the small size of the egg, because we know of many Hymenoptera, living as internal parasites, with a very small egg which can be laid in the egg or larva or pupa of the host insect, but which does not present a cleavage extending to the cytoplasm; the cleavage is limited to the nuclei and leaves the cytoplasm undivided.

We have seen in the polyembryonal Chalcididae that all the oosome remains in one of the blastomeres of the 1st division of cleavage (*Ageniaspis*) or in one of the blastomeres of the 2d division. As it is now certain from the studies made of its destiny in monembryonal species that the oosome is the visible determinant of the sexual cells, it is noteworthy that the differentiation of these cells from the somatic takes place from the 1st or 2d division of the egg cleavage. In the monembryonal species, provided also with an oosome, such a differentiation takes place much later: at the stage of blastoderma or a little forward.

I stress this precocious differentiation of the two kinds of blastomeres, somatic and sexual, because I shall revert to it again in considering the subject of the asexual larvae.

In certain species of *Platygaster,* where the egg is always destitute of oosome during cleavage or blastoderm formation, it has been possible to distinguish the cells destined to form the reproductive organs from those of the soma.

### 5. Origin of two kinds of larvae (sexual and asexual) from the same egg

The precocious distinction of somatic and sexual cells in the development of monembryonal species has an organogenetic individual value, but in the polyembryonal species it takes another larger aspect; it offers a solution of a biological problem of great interest. (1) if, during the cleavage of the egg, some blastomeres, certainly destined to form

the soma, are separated from the sexual, are they able to give rise to a complete embryo and by means of regulation to form sexual cells also, forming in this manner a complete organism? (2) Can the somatic cells, already differentiated as such since the first cleavage divisions, although lacking potentiality for the formation of sexual cells, originate sterile individuals similar to or somewhat different in form from normal individuals and capable of short life at least?

In the numerous experiments of blastotomy, performed by various authors from Chabry (1887) to Rund (1925), no animal species with a precocious differentiation of oosome was ever selected. Therefore, although very interesting in relation to other problems, these experiments do not present answers to the questions enunciated above; on the contrary, in the development of *Litomastix*, we have a case which is worthy of careful consideration, although we have no absolute demonstration of my reasonable interpretation.

During the cleavage of the egg, as we have seen, the sexual blastomeres have a delayed multiplication compared to that of the somatic; therefore these prevail numerically over the others.

After the great primitive morula is formed from well defined cells of two kinds, protected by the polar involucrum, there begins to be manifest a first constriction of the primitive embryonal mass in such a manner that this becomes elongated, strained first in one part, later along various points of the longitudinal axis, and later still in a transverse direction also, until it forms an embryonal mass, which is divided by the mechanical action of the involucrum against the centrifugal pressure of the embryonal cells in active favorable multiplication, into small secondary groups, constituting the polygerminal complex, which can show in a median longitudinal section more than 60 units. During these haphazard constrictions and divisions, the primitive embryonal mass is divided into groups of embryonal (somatic and sexual) cells, which can divide again haphazardly into other groups. These at last will form isolated embryos, which (in *Litomastix*) will total a thousand (and more, asexual larvae comprised) for each egg. In such separation of groups there is no regularity in the disposition of the somatic embryonal cells together with the sexual, or regularity in the separation of groups, which is haphazard in itself. Therefore there will be groups including somatic and sexual cells, and groups composed of somatic cells only, because they are the more numerous. The groups embracing both kinds of embryonal cells give rise to embryos and normal larvae, destined to transform into adults. The groups composed of somatic cells only do not disintegrate; on the contrary they develop

precocious individual larvae, having form, structure and dimensions different from those of the normal larvae, to which I have given the name of asexual larvae. These have been described in preceding pages, but here they must be considered from a general biological viewpoint which will be corollary to the above exposition, always supposing that my interpretation is in accord with the facts or at least approximately so.

*Litomastix* with this manner of development, giving origin to two kinds of different larvae, proves the possibility that groups of somatic cells, precociously separated at the blastomere stage from the sexual cells, have the potentiality of forming an individual, complete for some organic systems and incomplete for others, though having a general body shape which gives it the appearance of a perfect organism at a determined stage and for a determined order of insects.

No entomologist, acquainted with the larvae of parasitic Hymenoptera, can equivocate in ascribing the asexual larva of *Litomastix* to such an order of insects; but nobody who had followed only the development of the typical larva of that species and had observed it at the last stage, could have been able to attribute the asexual larva to the same species of insect, without having the experimental proof which I was obliged to obtain (1905) and which Patterson repeated (1921).

I maintain that this fact is a very interesting one for the biologist, and that it must be kept in mind in other researches in the development of Hymenoptera and experiments of blastotomy in other Metazoa, because it demonstrates that in the somatic cells (always, at least, if precociously differentiated as such) not only formative substances, the sexual-cells' determinant, are absent, but with the same substances has some organizing potentiality for one or more other systems also (in the case of *Litomastix* malpighian tubes, respiratory and circulatory systems).

The experimental work on insects by a number of researchers (Oudemans 1899, Kellogg 1904, Meisenheimer 1909, Regen 1909, Kopeč 1911–13), who employed castration and the grafting of gonads of one sex into the body of individuals of the opposite sex, and above all the gynandromorphism offered by the comparable experiments of Nature, render the conclusion inevitable that in insects the body with its various parts, sexual cells excepted, is independent of the gonads and furthermore that by these neither hormones or other substances are elaborated so as to be (Steche 1912; Geyer 1913) capable of direct action on the somatic parts of the same insect. It is sufficient to to remember that in the same perfect gynandromorphous individual,

where half the body has male gonads and the opposite half female gonads, each half of the body has all the characteristics of the male and of the female without any interference between the male gonad and the female soma and vice versa, the diametrical opposite to what is proved for the vertebrates.

In the case of the asexual larva, Nature has carried on an advanced experiment and has separated groups of somatic cells from the primitive morula or from the secondary morulas. Such groups have demonstrated the potentiality of independent development from the sexual cells and their capacity to form asexual larvae, which are viable for some days at least, though not complete in all the organic systems. This proves that the somatic cells in insects really possess an independence of development from the sexual cells, but that they cannot produce an organism perfect in all its parts.

Having shown that in many Chalcididae, Braconidae and Proctotrypidae the larva has various stages, generally 4 to 5, of which the earlier may be very different from the later, it would be possible to maintain that the form of asexual larvae is an atavism, namely, that it represents the larva of ancestors of the genus *Litomastix*, in which the normal larva had a first stage which was free and similar to the asexual larva. At a later time in the evolution of the species, with a more special adaptation as an internal parasite, with rapid development in relation to the abundance of nourishment offered by the host, the asexual larva should have been suppressed in the actual normal development, though remaining in a latent stage in some genes which are dominated by the normal rhythm of the development of the whole organism, when complete with genital organs also. In some embryos, with the sexual cells absent, the somatic characteristics, latent in the genes of the somatic cells, could become free to develop and produce an ancestral larva of the first stage, but would be incapable of transforming into a larva of the following instars due to the lack of the sexual cells and of other indicated systems. Therefore it should cease developing and die after a few days (about 6 to 10 in *Litomastix*).

The function of larvae of the 1st stage, which have a body slenderer than that of the typical larva of Hymenoptera in the last stage, more agile and better adapted to diffuse itself through the host tissues, having also well-developed labial glands, can be considered of some usefulness to Hymenopterous parasites in that mechanical action is increased by the strong mandibles and the chemicals of the labial glands, which discharge the secretion into the haemolymph of the host.

Therefore the reappearance of such larvae of *Litomastix truncatellus* can be considered useful also to the species. If this should not really be so, especially for *Litomastix*, it might be possible to suppose that the asexual larvae represent the larva of the first instar, which, *in antiquo*, would normally be present in the ancestor of *Litomastix*.

The formation of asexual larvae induces one to think of the free-martin of *Ruminantia*. Lillie (1916 etc.) published an important revision of numerous cases and demonstrated that the sterility of the free-martin is caused by the hormones developed by the genital organ of the male twin, which, entering the circulation of the other individual, inhibit the normal development of the sexual organ of the female; but, though this may be a good explanation of numerous cases, other cases of monozygotic twins could be referred to a very unequal separation of sexual cells between the twins or a complete defect in one of the two, similar to what was sustained by Hart (1910) and with some variations by Cole (1916).

## 6. Causes of polyembryonal development

The polyembryonic Hymenopterous species, as far as is known up to the present time, can produce from one egg a few individuals in some species, in others 15, in others 70, in others some hundreds, and in others a thousand and more. What are the causes of this phenomenon? We remember that such species are all parasites of other insects and that, the species of *Macrocentrus* excepted, the eggs are laid in the eggs of the host, where the development begins and continues in the larva of the host or (in some species) in the chrysalis also.

Referring to the known experiences of Loeb (1894) with the eggs of Echinidi, and especially to the work of Bataillon (1900–1901) with the development of eggs (2 hours after fecundation) of *Petromyzon planeri*, in which he got the dissociation of the blastomeres and their development to the point of producing complete double embryos, Marchal (1904) concluded that variation of osmotic pressure was the cause of insect polyembryony.

Now if we examine particularly the case of *Litomastix*, we must keep in mind that the egg is surrounded by the almost impermeable chorion and develops at the expense of its own nutritive material until the 6th division of segmentation, and its ooplasm is not in immediate contact with the content of the egg of *Plusia*. After this stage, which occurs about 7 hours after laying, it loses the chorion and remains free and in direct contact with the tissues and the nutritive material of the

host, which it uses to accelerate development and to reach an uncommon (for eggs of parasites Hymenoptera) increase of the primitive morula. But the embryonal cells are already completely surrounded by the polar ooplasm (trophamnios). From that stage of development on, the nutriment taken from the host, for its abundance and quantity, has an exciting action on the embryonal cells, which, being also separated by the cytoplasm, have a great total surface, to which a more active exchange corresponds. Such an augmentation of the embryonal cells produces a disharmony in the form of the total mass, which must acquire an irregular shape.

The cause therefore of the unusual cell-augmentation, in which a disharmony of shape of the whole mass results, is the first step toward the process of dissociation, which appears later and originates through hypernutrition of the blastomeres, furnished by the elements contained in the host egg and elaborated by this also. The cleavage cells, because of this extraordinary augmentation, tend to break by centrifugal pressure the resistance of the surrounding polar involucrum and of the host tissue also, in which the polygerminal mass can be fixed.

For me, in conclusion, the cause of polyembryony in *Litomastix* is the favorable nutriment as to quantity and quality, which induces an extraordinary activity of multiplication of the cleavage cells, either somatic or sexual, and the centripetal force of the separative trophamnios of groups of those cells. In the case of *Litomastix* the trophamnion is reduced later to a simple membrane, which surrounds each separated group also. These groups, finally, can develop harmonically in embryonal unity.

The blastomeres of *Litomastix*, either somatic or to a lesser degree sexual, have a very great evolutionary capacity; therefore, immersed as they are, in a very favorable nutritive fluid, they multiply rapidly and tend to spread just as embryonal cells of pieces of tissues placed in adapted culture "in vitro;" they are prevented from an isolated dissociation by the polar involucrum, and they develop against it a centrifugal force. Meanwhile the involucrum produces constrictions, which first strangle the primitive germinal mass and later divide the same in groups.

It remains to find the cause of the formation of blastomeres, distinct in the cytoplasm also after the first cleavage division in *Litomastix*. If we examine the egg structure during cleavage in the other polyembryonal species of Hymenoptera; and in various monembryonal Proctotrypidae, which, contrary to the usual rule, also have a cleavage extended to the nuclei and not to the ooplasm, we find as a constant

difference between one group and the other that the group with total cytoplasmic cleavage is provided with a polar involucrum (trophamnios) and the group with multiplication of nuclei only is destitute of such an involucrum; therefore it seems probable that the presence of a cytoplasmatic involucrum is the direct or indirect cause of the total cleavage.

However, in seeking the reason why some Hymenopterous species of parasites of insects have acquired embryonal morphogenetic potency distinct from that of other species of the same families of Hymenoptera living as internal parasites of insects and sometimes in the same species of insects and having very small eggs also, it is possible to suspect that the cause is inherent in the diverse capacity of reaction which similar protoplasms can have, though placed in apparently similar conditions. It is remarkable that this particular potentiality of the egg has been acquired in similar conditions by some species of different families and yet not by all the species of a family (f.e. Chalcididae) or by all the species of a genus (f.e. *Platygaster*).

The polyembryony of Hymenoptera is, from what we have seen, a real separation of blastomeres in groups, taking place at various stages of the morula of various dimensions, from *Platygaster* to *Litomastix*. Each group comprises, in the Chalcididae and Braconidae, blastomeres of two kinds: somatic and sexual or of one kind only, at least apparently, (Proctotrypidae) and therefore equipotent.

A polyembryony similar to that of Hymenoptera, namely caused by separation into groups of primitive embryonal cells, was described by Harmer (1893–1900) for some very distinct genera (*Crisia*, *Lichenopora*, *Tubulipora*) of Bryozoa. In these Metazoa the egg in the ovicella remains suspended by a kind of funicle and later is surrounded by a follicular tissue, which can be compared physiologically, though not morphologically at least so far as known, to a trophamnios. The egg first forms, by total cleavage, a germinigenous mass. This increases rapidly through multiplication of its cells, always surrounded by the follicular tissue, and, under this centripetal action and the centrifugal pressure of its own cells, deforms, strangulates in various points, and produces buds or dissociation of embryonal cells groups, which at last develop into distinct embryos, each giving a larva.

In *Allolobophora caliginosa* Savigny, f. *trapezoides* A. Dugés (= *Lumbricus trapezoides*) Kleinenberg described a kind of gemmation of the gastrula producing 2 embryos. This twinning process is very different from the polyembryony of the Hymenoptera and of the Bryozoa; very different also from that of some Mammalia (Edentata), which

has been extensively studied, though the first cleavage stages are not yet very well known.

In these Vertebrata (Fernandez, Newman and Patterson 1907, Patterson 1913, Newman 1917) it has been proved that from an egg a simple embryo develops till the blastodermic vesicle is complete; afterward in the case of *Dasypus* (= *Tatusia*) *novemcincta* the wall of the blastodermic vesicle, which has been pushed against the vegetative pole, will become thinner in correspondence to the said pole, meanwhile inspissating at the two opposite (right and left) sides, from which first evaginations of the primary embryos arise. From each of these will take place the budding of secondary embryos, forming in this manner 4 embryos. These, later, remain surrounded each by an amniotic sac, but all four by the same chorion. In *Mulita* (*Dasypus hybrida*) similarly, 12 embryos can develop from one egg; in other genera of Edentata, allied to *Dasypus* also, the development is monembryonal, or in *Euphractus* (*E. villosus*) 2 twins develop, but from 2 eggs, though surrounded by the same chorion, for the reason that the 2 eggs remain contiguous in the uterus and develop in the same position.

The cause of polyembryony in the Edentata is difficult to determine. Newman (1917) attributes it to activation of more morphogenetic centers, consequent to the relenting of metabolism in the central or animal pole of the blastodermic vesicle, a principle enunciated by Child on the basis of numerous studies of regulation of the form, especially in *Cerianthus* (1903–1905). Newman also maintains that polyembryony in the Edentata must be in relation to some special type of simple uterus, with the so-called germ-layer reversion and the reduction of the apical pole of the blastodermic vesicle with the great enlargement of the extra-embryonic cavity. In any case, the process of polyembryony in the Edentata and the Anellids also is very different from that of Hymenoptera.

### 7. Sex determination

I must premise that the chromosomic set of the egg and of the spermatozoon of any species of polyembryonal Hymenoptera is not well-known to date. Therefore it is not possible to take into consideration the special chromosomic mechanism which regulates the production of males and females in any detail. The following general facts have been definitely observed in all the species: (1) the parthenogenetic eggs form 2 polar bodies, as well as the inseminated eggs; (2) the polar

bodies separate completely from the female pronucleus, and (3) from the female pronucleus, which becomes the first nucleus of segmentation, there can originate many individuals, more than a thousand, all males. Patterson and Porter (1917) and afterward Patterson and Hamlet (1925) published results of researches demonstrating that the males of polyembryonal origin are all haploid; therefore it should have been ascertained for these Hymenoptera that haploidism is confined to the male sex, and diploidism obtained by the process of fertilization to the female sex; furthermore, that sex determination takes place in the egg with the complete act of maturation for the male, and with maturation plus fecundation, namely the conjugation of male and female pronuclei, for the female; and that such a determination has value for one as for a thousand or more individuals derived, as in the case of polyembryony, from the same egg, proving that sex determination is very precocious and very tenacious, if not unchangeable. Patterson advanced the view that sex determination of hymenopterous individuals, originating by polyembryony, could be changed at least in certain cases, basing his statement on the presence of one or a few males among more numerous or many females in polyembryonal broods. Although it must not be absolutely excluded that among many females, originating from one egg, there could appear, for exceptional causes, a haploidism limited to few specimens, we do not have, so far, valid grounds for admitting a change of sex in a part, though minimal, of the same brood, because that which seemed of more value to Patterson, namely the appearance of one or few males in the broods of *Platygaster felti*, cannot be taken into consideration, as it is not proved to be due to polyembryony in this species.

Therefore polyembryony confirms what is known for animals having a monoembryonic development of the classic type of the honey bee: (1) that the egg after maturation remains provided with a pronucleus which has male characteristics; (2) that the spermatozoa in such Metazoa carry a pronucleus of female characteristics, which has a dominant potency also; (3) that the sex is determined in the egg before or during the essential process of fertilization and that it cannot be changed. It is only possible to admit that, under very exceptional conditions, the chromosome set of the sexual cells in their repeated divisions (which in the case of *Litomastix* can be more than a thousand) may lead to a change from diploid to haploid, or at least be without the chromosomes which determine the prevalent sex. But further proof is needed to validate such a supposition.

## 8. Determination of the Sex Cells

So far as we know, both in the polyembryonal Hymenoptera and the monembryonal, the chromosomes set, which has the first cleavage nucleus, derived from the female pronucleus alone or from its conjugation with the male pronucleus, determines the sex, which, as we have seen in the preceding paragraph, must be considered immutable (or nearly so). But between the somatic and the sexual cells no difference has been detected so far, either in the number of chromosomes or in the presence of one of the two kinds of chromotinic reduction, as observed in 1887 by Boveri with the classic researches on *Ascaris*, or recently (1908) in the dipterous insect (*Miastor*) by Kahle. Therefore, though not excluding the possibility that in the Hymenoptera with polyembryonal development there may exist a chromatinic reduction in the nucleus of somatic cells, for the present this does not appear to have been observed by any author. On the contrary, in the Chalcididae and in the Braconidae we have full evidence to show that sex cells are determined by a plasmatic factor, namely the so-called oosome (or egg nucleolus). It is necessary to note that notwithstanding the plasmatic nature of the oosome, advanced by me and confirmed by Patterson, Leiby, and more particularly by Gatenby and Hegner, the latest methods of technique for differentiating the cytoplasmatic inclusions should be applied in order better to define the nature of the oosome. But at present it appears to be certain that in various families of different orders of insects, it is clearly of the determinant sex cells. Therefore the researches on polyembryonic Hymenoptera afford further evidence, already forthcoming, really numerous in Metazoa from the *Chaetognatha* (*Sagitta*) to the *Arthropoda*, of the importance of such an oosome in differentiating or organizing the sexual cells, because in these polyembryonic Hymenoptera more than a thousand individuals arise from the same egg and inherit part of the same oosome. This argument is also of great general biological interest, and is worthy of further careful comparative study in many forms. I recall that I myself, though using the same methods of preservation and coloration applied in other Chalcididae, could not detect the oosome in a continuously parthenogenetic species of *Prospaltella* (*P. berlesei* How.), to which genus bisexual species belong, also having an egg provided with an oosome. Therefore it will be important to find out in this case when and in what way the sexual cells differ from the somatic. The absence of oosome in said species should not be connected with their thelyto-

cous parthenogenesis, because in the paedogenesis of *Miastor*, the larvae, which produce other female larvae, form a polar body alone, as in *Prospaltella berlesei*, and the egg is notwithstanding furnished with an oosome. Perhaps there is another nucleo-plasmatic mechanism, for which further search is necessary.

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# EXPLANATION OF PLATES

PLATE 1

## PLATE 1

Fig. 1. *Plusia gamma:* adult.

Figs. 2–3. Female of *Litomastix* laying the egg in the egg of *Plusia*, seen laterally and from the dorsum.

Fig. 4. Larva of *Plusia gamma.*

Figs. 5–7. Carcasses of larvae of *Plusia gamma* full of cocoons of *Litomastix.*

Fig. 8. Sagittal section of a developing egg of *Plusia: a* amnios, *c* chorion, *s* serosa, *o* (also the other black balls) egg of *Litomastix.*

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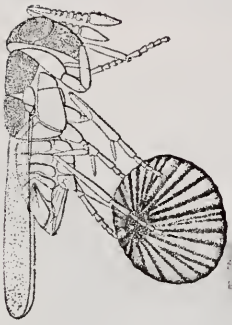

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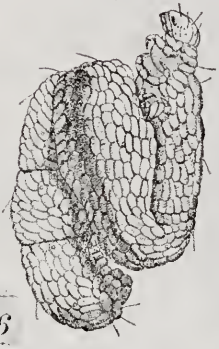

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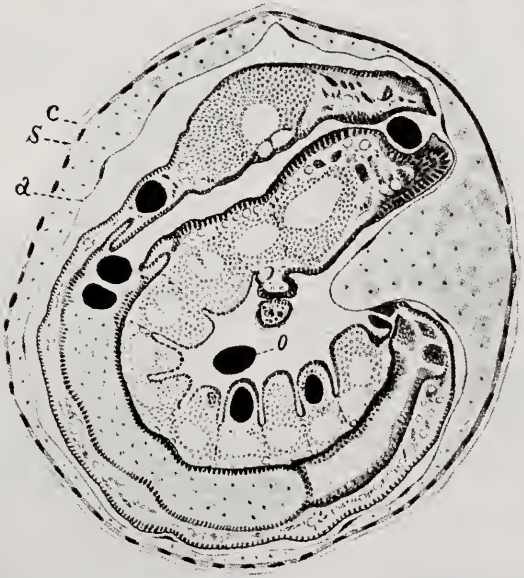


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PLATE 2.

## PLATE 2

Fig. 9. Egg completely developed: *c* chromatin of the nucleus of the oocyte of first order, *d* chorion, *m* micropyle, *n* oosome (or nucleolus).

Fig. 10. Egg half an hour after deposition: *a* nucleus of the first polar body in anaphase, *b* nucleus of the oocyte of second order in anaphase, *n* oosome, *s* head of spermatozoon.

Fig. 11. Egg at a little later stage than the preceding: $a^1$ and $a^2$ nuclei derived from the first polar body; $b^1$ second polar body, $b^2$ female pronucleus, *n* and *s* as above.

Fig. 12. Egg at a little later stage than the preceding: *s* male pronucleus, $l^2$ female pronucleus, the other signs as above.

Fig. 13. Egg with first cleavage nucleus in mitosis.

Fig. 14. Egg with two cells of segmentation ($N^1$ and $N^2$, *n* oosome) and the undivided polar ooplasme with the polar nucleus (*p*) derived by fusion of the 3 nuclei of the polar bodies.

Fig. 15. Egg a little more advanced with the two segmentation (embryonal) cells in mitosis.

Fig. 16. Egg with four embryonal cells, one of which has received the entire oosome.

Fig. 17. Egg a little more advanced in development, with the embryonal cell containing the oosome in metaphase and the other three in anaphase and the polar nucleus in anaphase also.

Fig. 18. Egg with the embryonal part composed of 14 cells, of which two only have the oosome substance scattered in the cytoplasm and are represented as separated also in the upper right part in comparison with a cell lacking oosome.

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PLATE 3

## PLATE 3

Fig. 19. Egg about seven hours after deposition: the polar part (P) has 32 nuclei, of which 30 are readily visible; and the embryonal part (E) is composed of about 30 cells.

Fig. 20. Optical longitudinal section of an egg at a later stage, having a great number of polar nuclei and embryonal cells.

Fig. 21. Optical longitudinal section of a polygerminal mass: *a* sexual cells, *b* somatic cells, *r* involucrum (trophamnios).

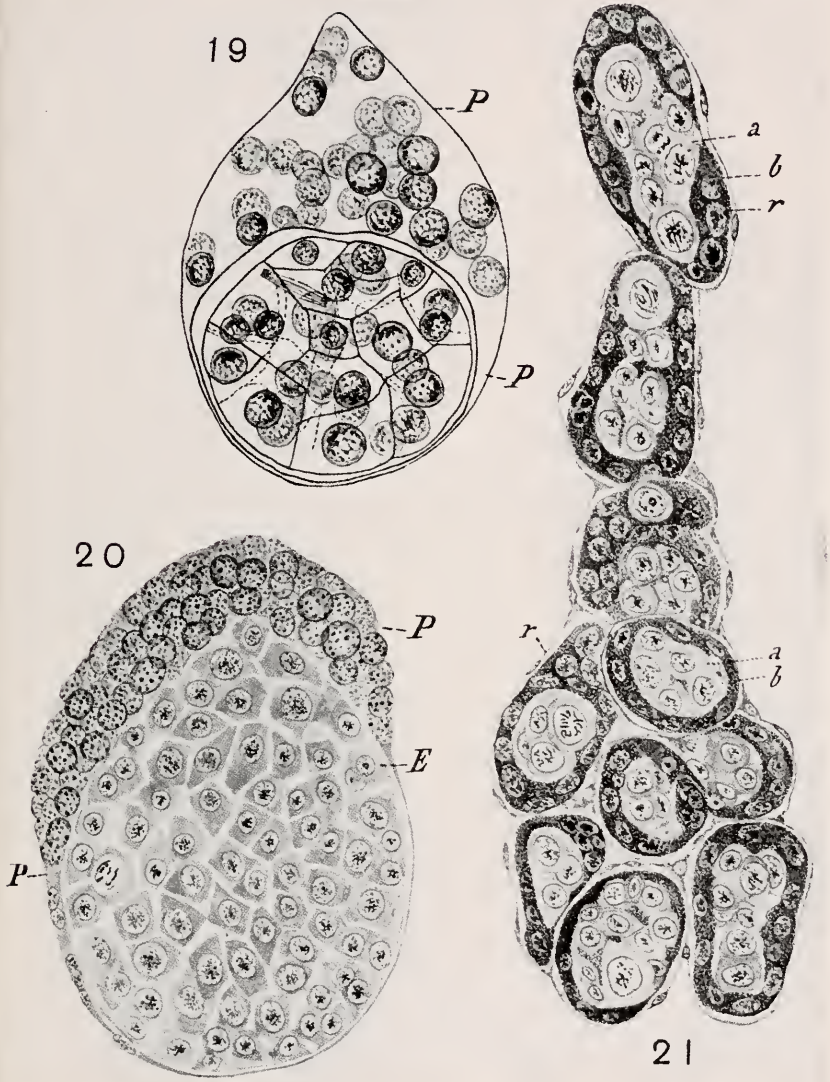
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PLATE 4

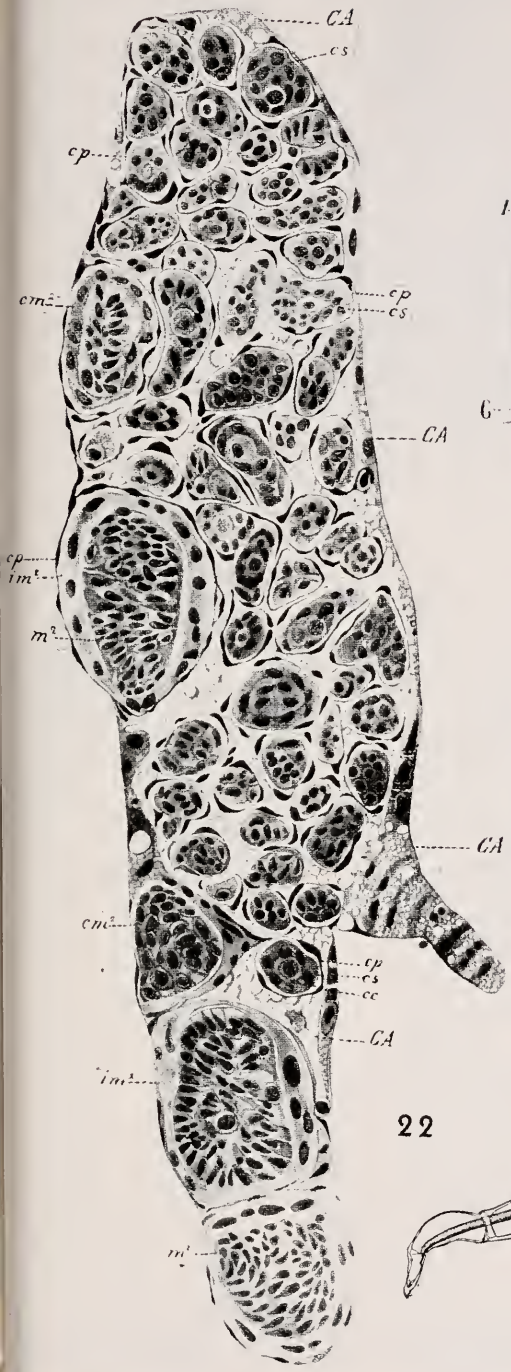
## PLATE 4

Fig. 22. Longitudinal section of a complex of secondary germinigenous masses and of some monembryonal: CA adipose tissue of the host larva, *cc* sexual cell of a secondary germinigenous mass, *cm*² secondary monembryonal mass, *cp* external involucrum of the monembryonal and of the germinigenous masses, *cs* somatic cells; *im*² internal involucrum of the secondary monembryonal masses, *m*² embryonal morula of the secondary monembryonal masses.

Fig. 23. Sexual larva of *Litomastix* showing the internal organs also in transparency: A imaginal disk of the antennae, *a* and *b* imaginal disk of wings, E supraoesaphageal ganglion, G gonads, I middle intestine, N ganglionar chain, P posterior intestine, S labial glands, T malpighian tubes, 1–3 imaginal disks of the feet.

Fig. 24. A sexual larva of *Litomastix* showing the internal organs.

Fig. 25. The same seen superficially with the addition of the parietal muscles: N ganglionar chain, C fat cells, I intestine, S labial glands.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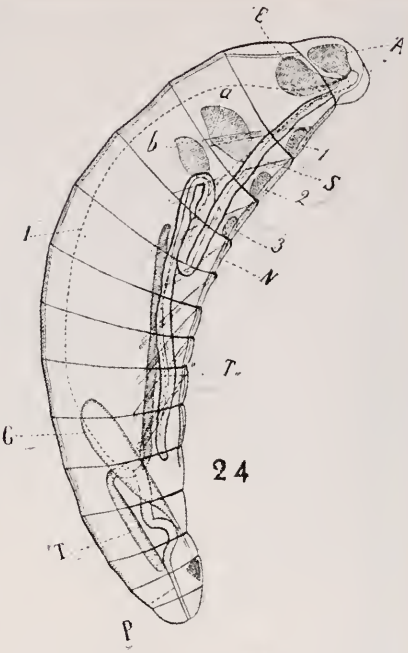
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